D23/19

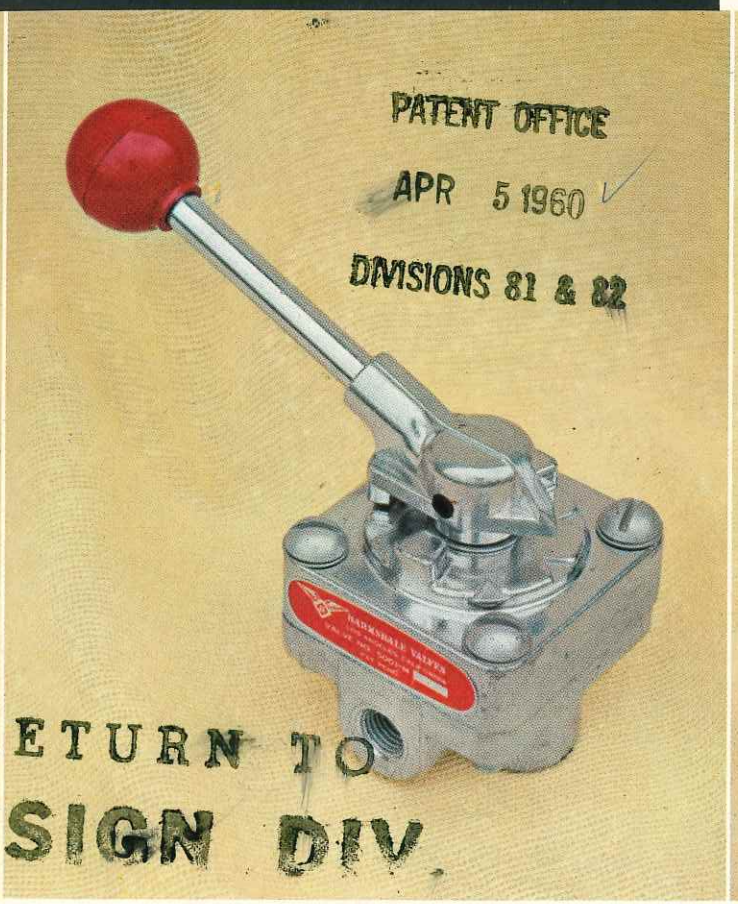
Barksdale

ROUTING SLIP Date _____

Review and pass along as indicated

1. _____ Management
2. _____ Purchasing
3. _____ Engineering
4. _____ Tooling
5. _____ Maintenance

Finally Return to: _____



PATENT OFFICE
APR 5 1960
DIVISIONS 81 & 82
RETURN TO
DESIGN DIV.

AIR-SEAL* VALVES

*THE AIR PRESSURE IS THE SEALING FORCE. THE HIGHER THE PRESSURE, THE TIGHTER THE SEAL.

THIS CATALOG ANSWERS

ENGINEERING NEEDS:
- Rate of flow
- Complete dimensions
- Type of threads
- Operating pressure
- Weight
- Current (inrush and holding for solenoids)

MAINTENANCE NEEDS:
- Parts lists and prices
- Service information
- Information and charges for Factory rebuilt valves

PURCHASING NEEDS:
- Part number
- Price
- Quantity discount schedule
- OEM discount schedule
- Shipping weight
- Terms and conditions
- FOB point
- Warranty
- Return merchandise policy
- Schedule order policy

WHERE TO BUY:

HOWELL-LANIER ENG. SALES INC.
4703 Ritchie Highway
Baltimore 25, Maryland
Phone: STate 9-6800

RECD MAR. 1960

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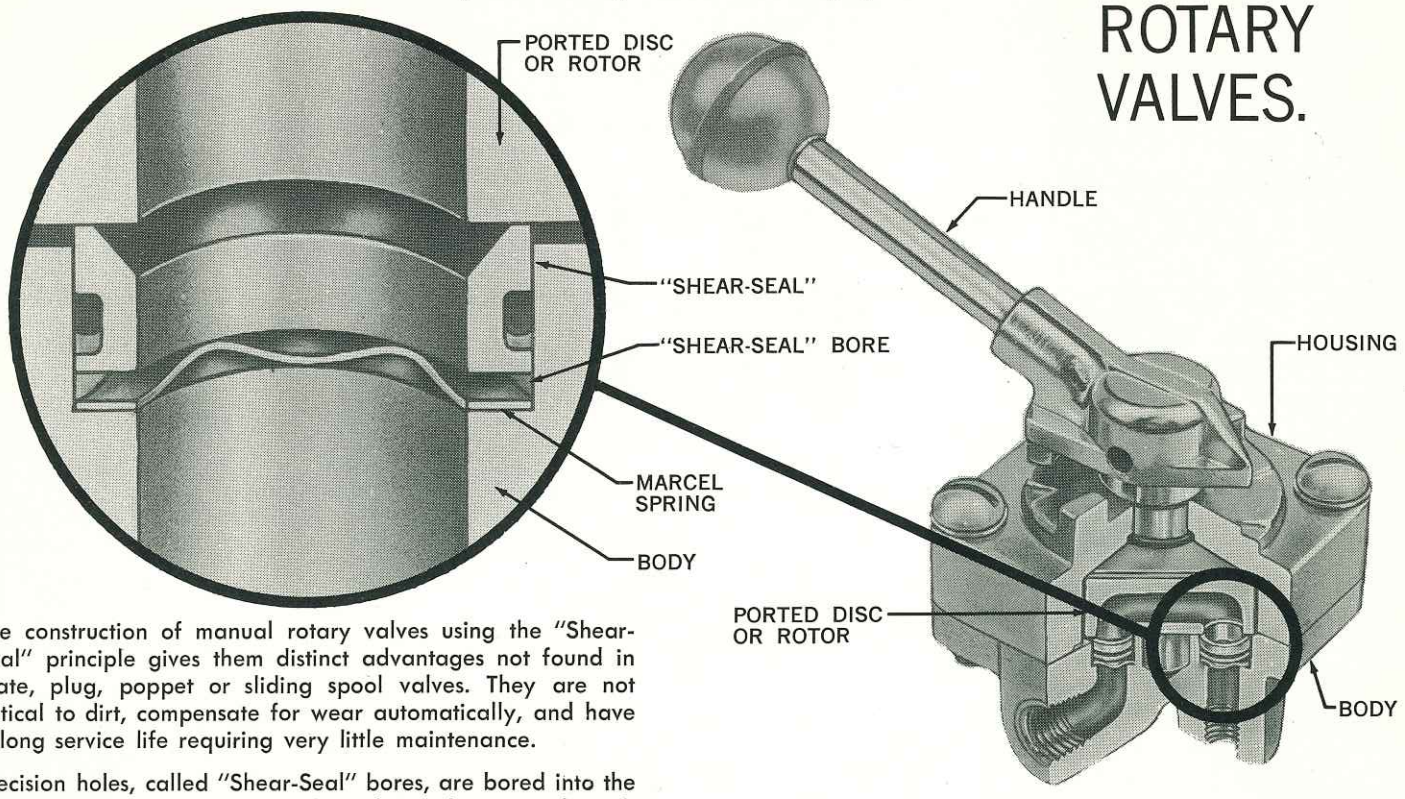
The "Shear-Seal" principle as applied to MANUAL ROTARY VALVES.



The construction of manual rotary valves using the "Shear-Seal" principle gives them distinct advantages not found in plate, plug, poppet or sliding spool valves. They are not critical to dirt, compensate for wear automatically, and have a long service life requiring very little maintenance.

Precision holes, called "Shear-Seal" bores, are bored into the valve body and are connected to the outlet ports through round flow passages. Marcel springs are placed in the bottom of each hole. "Shear-Seals" are then placed on top of the springs The "Shear-Seal" is a tubular metal cylinder with an "O" ring seal inserted into a groove on its outside diameter. This "O" ring creates a seal between the valve body and the "Shear-Seal." The rim of the cylindrical "Shear-Seal" has been ground and lapped to optical flatness.

A ported disc is then assembled in metal-to-metal contact. The face of this disc has also been ground and lapped and is in contact with the sealing end of the "Shear-Seals." As the disc or rotor is turned it aligns the cross flow passages with the "Shear-Seal" holes, interconnecting or blocking off various ports of the valve. The whole assembly forms a round tubular continuation of the piping, unobstructed by spools, plugs or poppets.

A shaft is attached to the back side of the rotor and both rotor and shaft are assembled in the valve housing. The housing assembly and valve body are then bolted together. A handle is attached to the exposed end of the shaft so that the valve may be rotated to the various flow positions.

When the valve is piped into an air system the back side of the "Shear-Seal" is exposed to the system pressure. The lapped face of the "Shear-Seal" is maintained in metal-to-metal contact with the rotor and therefore is not exposed to the system pressure. Thus, an unbalanced pneumatic force equal to the area of the lapped surface of the "Shear-Seal" times the system pressure operates on the "Shear-Seal." The system pressure causes the "Shear-Seal" to achieve a leak-proof seal by forcing it against the lapped face of the rotor. As the pressure becomes higher, the pressure force becomes greater; therefore, the higher the pressure the tighter the seal.

As the valve is operated during its service life, its sealing surfaces are constantly maintaining themselves because each turn of the handle causes the "Shear-Seal" and rotor to relap each other. Thus a "Shear-Seal" valve literally wears in where other valves wear out.

BENEFITS OF THE "SHEAR-SEAL" VALVE.

1. Not Critical to Dirt

When a "Shear-Seal" valve is in any one of its flow positions the air passes through the hollow bore of the "Shear-Seal" and the cored holes in the rotor, thus preventing erosion from any dirt flowing across the face of the sealing surfaces. These lapped sealing surfaces are always protected since they are in metal-to-metal contact. Thus dirt, pipe scale, or other particles cannot get between them to score or damage them in any way. Dirt is a common cause for the high maintenance required on poppet, plate, spool, and plug type manual valves.

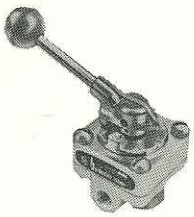
2. Automatic Wear Compensation Keeps Valve Leakproof

As the valve is operated, the lapped surfaces of the "Shear-Seal" and rotor are constantly sliding against each other. Therefore wear occurs, but spring pressure behind the back of the "Shear-Seal" compensates for this wear automatically by keeping the "Shear-Seal" forced against the rotor. At low pressures, or even vacuum, the Marcel springs themselves force the "Shear-Seals" against the rotor, thus preventing leakage under all conditions.

3. Low Maintenance and Long Service Life

Because "Shear-Seal" valves are not critical to dirt and are wear compensating, they will give a much longer, maintenance-free service life than any competitive valve. When maintenance becomes necessary it is no trouble. Without removing the valve from the line, simply by removing four bolts, all valve parts are accessible. By replacing worn "Shear-Seals" and "O" rings the valve can be like new in a jiffy. Thanks to the application of the "Shear-Seal" principle, Barksdale Valves are really the most inexpensive valves on the market.

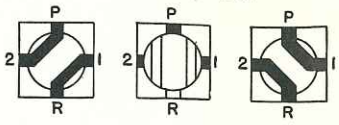
4-WAY • MANUAL • 0 to 250 P.S.I. • "SHEAR-SEAL" VALVES



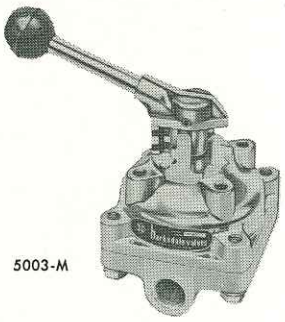
5001-M
5002-M

CLOSED CENTER

FLOW PATTERNS OF MANUAL 4-WAY VALVES
(viewed from shaft end)



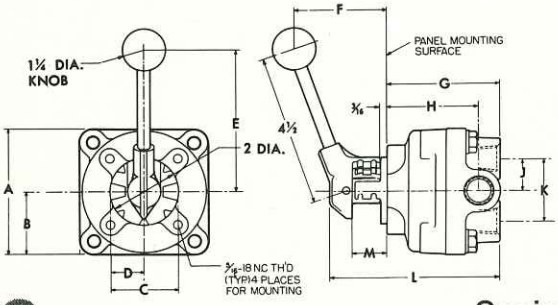
5000 Series • 3 Position Standard • Closed Center



5003-M

VALVE CHARACTERISTICS AND ORDERING DATA

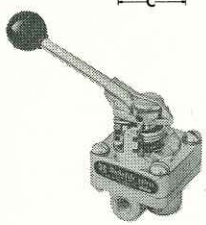
Port Size N.P.T.	Free Air Flow at 100 P.S.I. CuFt/Min.	PRESSURE RANGE P.S.I.	ORDERING NUMBER Closed Center	LIST PRICE	Shipping Weight Pounds
1/4"	140	0-250	5001-M	17.50	2 1/2
3/8"	140	0-250	5002-M	19.50	2 1/2
1/2"	350	0-250	5003-M	27.50	3



DIMENSIONS

VALVE SIZE	A	B	C	D	E	F	G	H	J	K	L	M
1/4"	2 5/8	1 5/16	2	1	4 1/4	2 1/4	2 1/32	1 1/2	2 1/32	1 5/16	3 1/4	1 7/32
3/8"	2 5/8	1 5/16	2	1	4 1/4	2 1/4	2 1/32	1 1/2	2 1/32	1 5/16	3 1/4	1 7/32
1/2"	3 3/4	1 7/8	2	1	4 1/4	2 3/4	3 1/4	2 5/8	1 5/16	1 7/8	4 15/16	1 1/32

Spring Return to Center

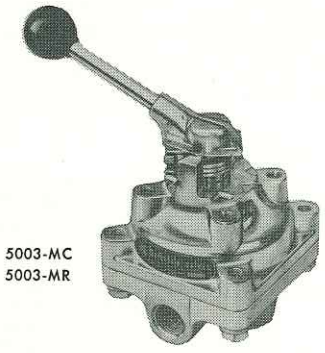


5001-MC
5002-MC
5001-MR
5002-MR

VALVE CHARACTERISTICS AND ORDERING DATA

Port Size N.P.T.	Free Air Flow at 100 P.S.I. CuFt/Min.	PRESSURE RANGE P.S.I.	ORDERING NUMBER Closed Center	LIST PRICE	Shipping Weight Pounds
1/4"	140	0-250	5001-MC	18.50	2 1/2
3/8"	140	0-250	5002-MC	20.50	2 1/2
1/2"	350	0-250	5003-MC	28.50	3

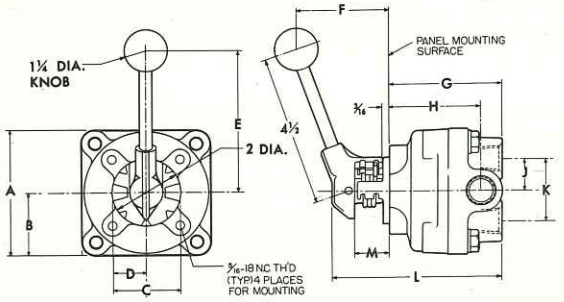
Spring Return to Reverse



5003-MC
5003-MR

VALVE CHARACTERISTICS AND ORDERING DATA

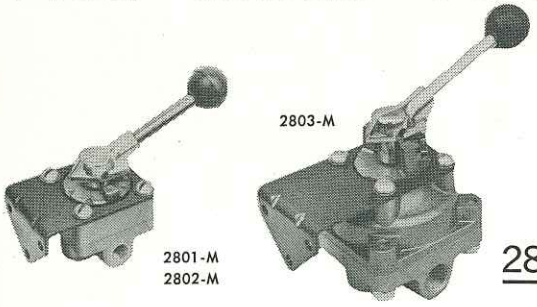
Port Size N.P.T.	Free Air Flow at 100 P.S.I. CuFt/Min.	PRESSURE RANGE P.S.I.	ORDERING NUMBER Closed Center	LIST PRICE	Shipping Weight Pounds
1/4"	140	0-250	5001-MR	18.50	2 1/2
3/8"	140	0-250	5002-MR	20.50	2 1/2
1/2"	350	0-250	5003-MR	28.50	3



DIMENSIONS (Spring to Center and Spring to Reverse)

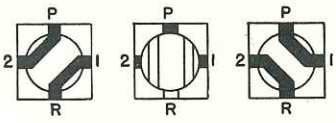
VALVE SIZE	A	B	C	D	E	F	G	H	J	K	L	M
1/4"	2 5/8	1 5/16	2	1	4 1/4	2 3/4	2 1/32	1 1/2	2 1/32	1 5/16	3 3/4	1 1/32
3/8"	2 5/8	1 5/16	2	1	4 1/4	2 3/4	2 1/32	1 1/2	2 1/32	1 5/16	3 3/4	1 1/32
1/2"	3 3/4	1 7/8	2	1	4 1/4	2 3/4	3 1/4	2 5/8	1 5/16	1 7/8	4 15/16	1 1/32

4-WAY • MANUAL • 0 to 250 P.S.I. • "SHEAR-SEAL" VALVES



FLOW PATTERNS OF MANUAL 4-WAY VALVES
(viewed from shaft end)

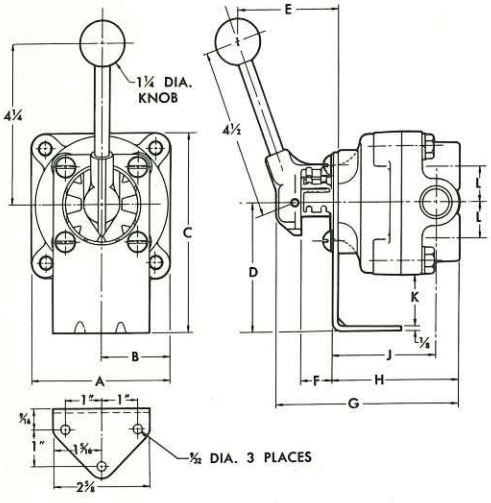
CLOSED CENTER



2800 Series • 3 Position Standard • Closed Center

VALVE CHARACTERISTICS AND ORDERING DATA

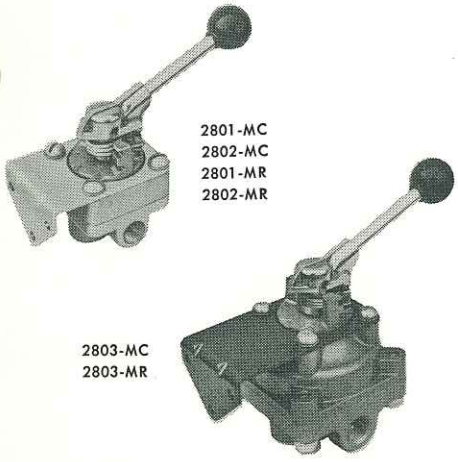
Port Size N.P.T.	Free Air Flow at 100 P.S.I. CuFt/Min.	PRESSURE RANGE P.S.I.	ORDERING NUMBER Closed Center	LIST PRICE	Shipping Weight Pounds
1/4"	140	0-250	2801-M	18.50	2 1/2
3/8"	140	0-250	2802-M	19.50	2 1/2
1/2"	350	0-250	2803-M	29.50	3



DIMENSIONS

VALVE SIZE	A	B	C	D	E	F	G	H	J	K	L
1/4"	2 5/8	1 5/16	3 11/16	2 3/8	2 1/4	13/32	3 1/4	2 5/32	1 5/8	15/16	21/32
3/8"	2 5/8	1 5/16	3 11/16	2 3/8	2 1/4	13/32	3 1/4	2 5/32	1 5/8	15/16	21/32
1/2"	3 3/4	1 7/8	5 1/4	3 3/8	2 3/4	29/32	4 7/8	3 3/8	2 3/4	1 3/8	15/16

Spring Return to Center

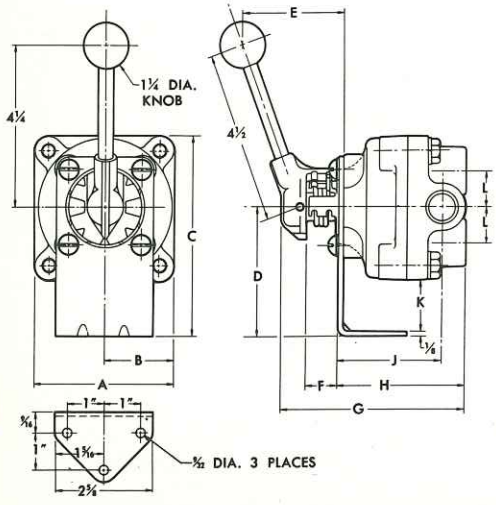


VALVE CHARACTERISTICS AND ORDERING DATA

Port Size N.P.T.	Free Air Flow at 100 P.S.I. CuFt/Min.	PRESSURE RANGE P.S.I.	ORDERING NUMBER Closed Center	LIST PRICE	Shipping Weight Pounds
1/4"	140	0-250	2801-MC	19.50	2 1/2
3/8"	140	0-250	2802-MC	20.50	2 1/2
1/2"	350	0-250	2803-MC	30.50	3

Spring Return to Reverse

Port Size N.P.T.	Free Air Flow at 100 P.S.I. CuFt/Min.	PRESSURE RANGE P.S.I.	ORDERING NUMBER Closed Center	LIST PRICE	Shipping Weight Pounds
1/4"	140	0-250	2801-MR	19.50	2 1/2
3/8"	140	0-250	2802-MR	20.50	2 1/2
1/2"	350	0-250	2803-MR	30.50	3



DIMENSIONS (Spring to Center and Spring to Reverse)

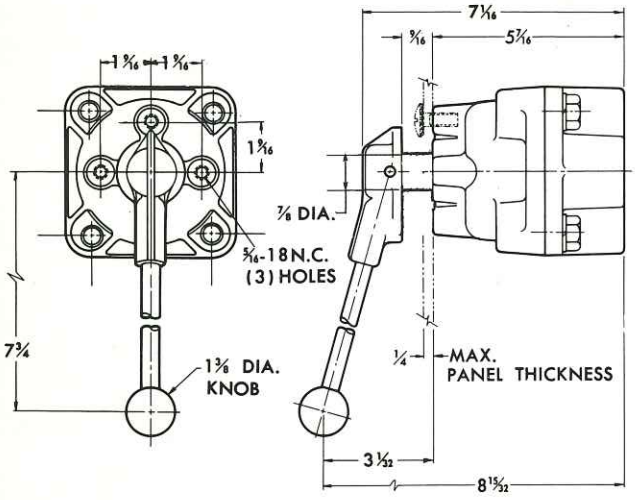
VALVE SIZE	A	B	C	D	E	F	G	H	J	K	L
1/4"	2 5/8	1 5/16	3 11/16	2 3/8	2 3/4	29/32	3 3/4	2 5/32	1 5/8	15/16	21/32
3/8"	2 5/8	1 5/16	3 11/16	2 3/8	2 3/4	29/32	3 3/4	2 5/32	1 5/8	15/16	21/32
1/2"	3 3/4	1 7/8	5 1/4	3 3/8	2 3/4	29/32	4 7/8	3 3/8	2 3/4	1 3/8	15/16

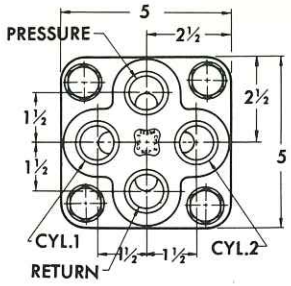
2804-M
2805-M

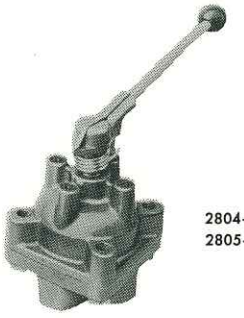
2800 Series • 3 Position Standard • Closed Center

VALVE CHARACTERISTICS AND ORDERING DATA

Port Size N.P.T.	Free Air Flow at 100 P.S.I. CuFt/Min.	PRESSURE RANGE P.S.I.	ORDERING NUMBER Closed Center	LIST PRICE	Shipping Weight Pounds
¾"	600	0-250	2804-M	66.00	8
1 "	600	0-250	2805-M	72.00	8





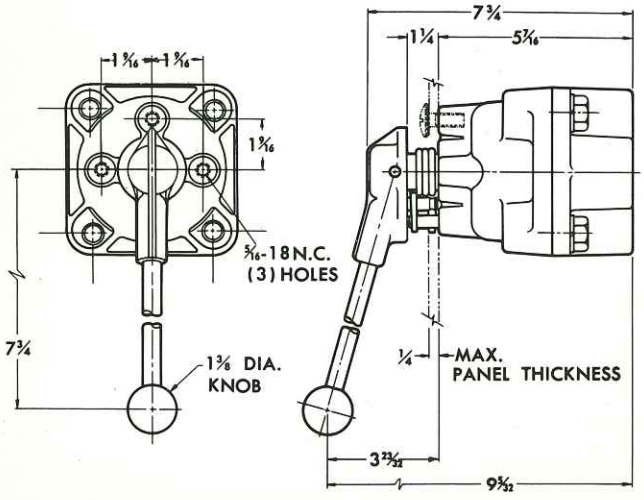


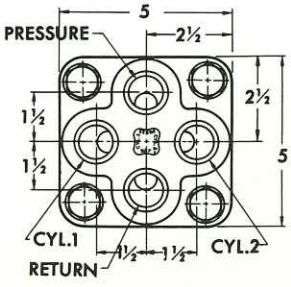
2804-MC
2805-MC

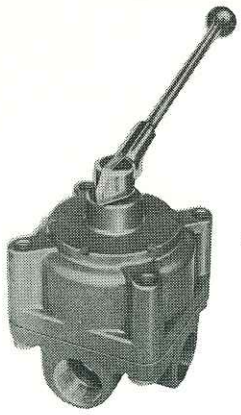
Spring Return to Center

VALVE CHARACTERISTICS AND ORDERING DATA

Port Size N.P.T.	Free Air Flow at 100 P.S.I. CuFt/Min.	PRESSURE RANGE P.S.I.	ORDERING NUMBER Closed Center	LIST PRICE	Shipping Weight Pounds
¾"	600	0-250	2804-MC	78.00	8
1 "	600	0-250	2805-MC	84.00	8





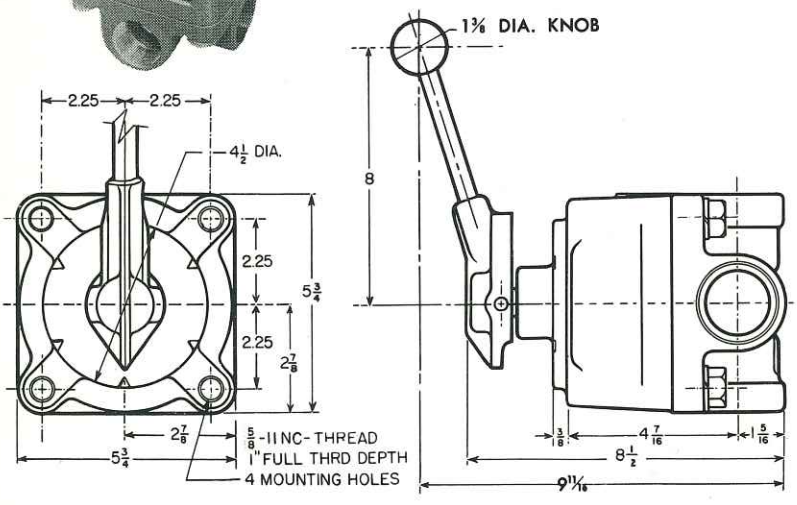


2807-M

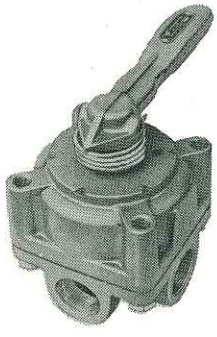
2800 Series • 3 Position Standard • Closed Center

VALVE CHARACTERISTICS AND ORDERING DATA

Port Size N.P.T.	Free Air Flow at 100 P.S.I. CuFt/Min.	PRESSURE RANGE P.S.I.	ORDERING NUMBER Closed Center	LIST PRICE	Shipping Weight Pounds
1½"	1700	0-250	2807-M	89.00	13¾



Spring Return to Center



2807-MC
2807-MR

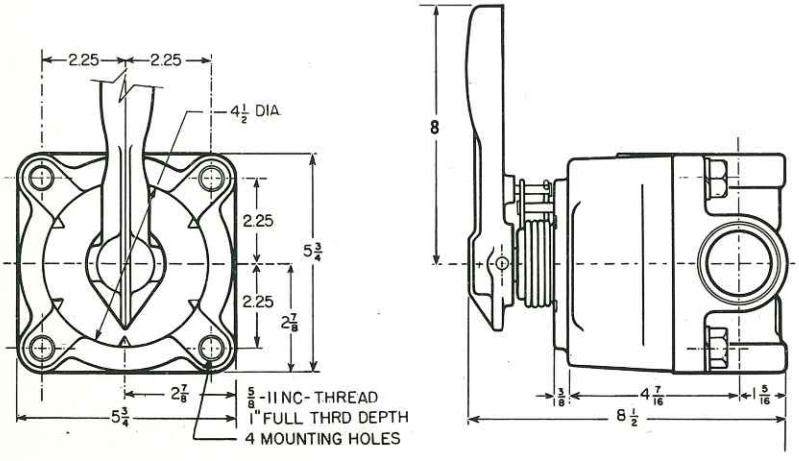
VALVE CHARACTERISTICS AND ORDERING DATA

Port Size N.P.T.	Free Air Flow at 100 P.S.I. CuFt/Min.	PRESSURE RANGE P.S.I.	ORDERING NUMBER Closed Center	LIST PRICE	Shipping Weight Pounds
1½"	1700	0-250	2807-MC	104.00	14

Spring Return to Reverse

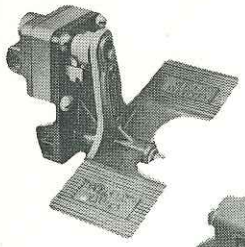
VALVE CHARACTERISTICS AND ORDERING DATA

Port Size N.P.T.	Free Air Flow at 100 P.S.I. CuFt/Min.	PRESSURE RANGE P.S.I.	ORDERING NUMBER Closed Center	LIST PRICE	Shipping Weight Pounds
1½"	1700	0-250	2807-MR	104.00	14



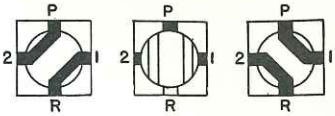
4-WAY • FOOT OPERATED • 0 to 250 P.S.I. • "SHEAR-SEAL" VALVES

CLOSED CENTER

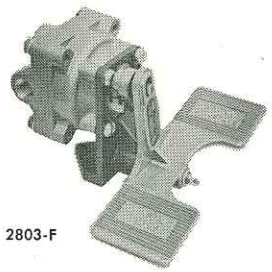


2801-F
2802-F

FLOW PATTERNS OF FOOT OPERATED 4-WAY VALVES
(viewed from shaft end)



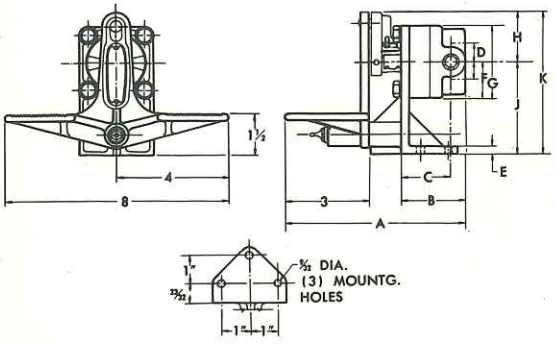
2800 Series • 2 Position Standard • Closed Center



2803-F

VALVE CHARACTERISTICS AND ORDERING DATA

Port Size N.P.T.	Free Air Flow at 100 P.S.I. CuFt/Min.	PRESSURE RANGE P.S.I.	ORDERING NUMBER Closed Center	LIST PRICE	Shipping Weight Pounds
1/4"	140	0-250	2801-F	24.50	3 1/2
3/8"	140	0-250	2802-F	25.50	3 1/2
1/2"	350	0-250	2803-F	35.00	4

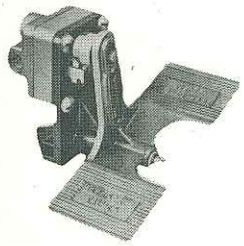


DIMENSIONS

VALVE SIZE	A	B	C	D	E	F	G	H	J	K
1/4"	6 1/2	2 5/16	1 25/32	21/32	13/32	1 5/16	2 5/8	1 13/16	3 3/8	5 3/16
3/8"	6 1/2	2 5/16	1 25/32	21/32	13/32	1 5/16	2 5/8	1 13/16	3 3/8	5 3/16
1/2"	7 11/16	3 1/2	2 7/8	15/16	13/32	1 7/8	3 3/4	1 7/8	3 3/8	5 1/4

Spring Return to Center

VALVE CHARACTERISTICS AND ORDERING DATA

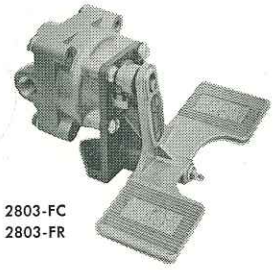


2801-FC
2802-FC
2801-FR
2802-FR

Port Size N.P.T.	Free Air Flow at 100 P.S.I. CuFt/Min.	PRESSURE RANGE P.S.I.	ORDERING NUMBER Closed Center	LIST PRICE	Shipping Weight Pounds
1/4"	140	0-250	2801-FC	24.50	3 1/2
3/8"	140	0-250	2802-FC	25.50	3 1/2
1/2"	350	0-250	2803-FC	35.00	4

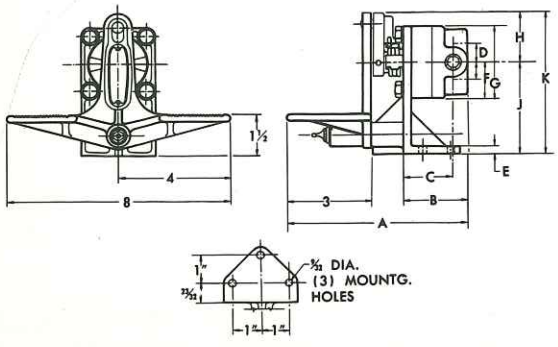
Spring Return to Reverse

VALVE CHARACTERISTICS AND ORDERING DATA



2803-FC
2803-FR

Port Size N.P.T.	Free Air Flow at 100 P.S.I. CuFt/Min.	PRESSURE RANGE P.S.I.	ORDERING NUMBER Closed Center	LIST PRICE	Shipping Weight Pounds
1/4"	140	0-250	2801-FR	24.50	3 1/2
3/8"	140	0-250	2802-FR	25.50	3 1/2
1/2"	350	0-250	2803-FR	35.00	4

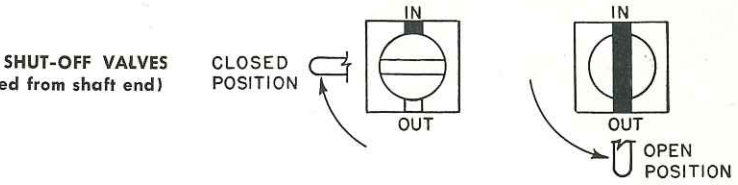


DIMENSIONS

VALVE SIZE	A	B	C	D	E	F	G	H	J	K
1/4"	6 1/2	2 5/16	1 25/32	21/32	13/32	1 5/16	2 5/8	1 13/16	3 3/8	5 3/16
3/8"	6 1/2	2 5/16	1 25/32	21/32	13/32	1 5/16	2 5/8	1 13/16	3 3/8	5 3/16
1/2"	7 11/16	3 1/2	2 7/8	15/16	13/32	1 7/8	3 3/4	1 7/8	3 3/8	5 1/4

SHUT-OFF • MANUAL • 0 to 250 P.S.I. • "SHEAR-SEAL" VALVES

FLOW PATTERN OF SHUT-OFF VALVES
(viewed from shaft end)

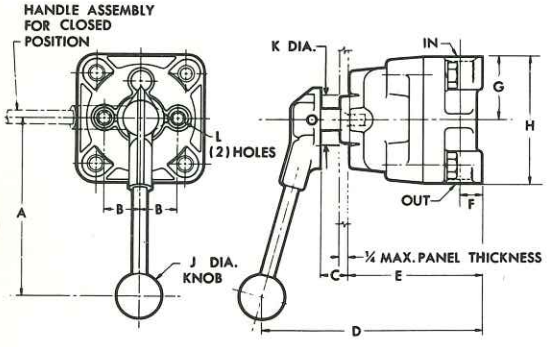


13ROAM2

10 Series • Standard

VALVE CHARACTERISTICS AND ORDERING DATA

Port Size N.P.T.	Free Air Flow at 100 P.S.I. CuFt/Min.	PRESSURE RANGE P.S.I.	ORDERING NUMBER	LIST PRICE	Shipping Weight Pounds
1/4"	70	0-250	11ROAM2	32.00	1,3/4
3/8"	210	0-250	12ROAM2	42.00	3
1/2"	210	0-250	13ROAM2	46.00	3
3/4"	600	0-250	14ROAM2	66.00	8
1 "	600	0-250	15ROAM2	72.00	8



DIMENSIONS

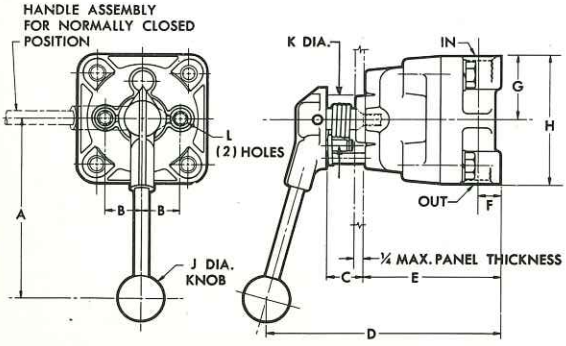
VALVE SIZE	A	B	C	D	E	F	G	H	J	K	L
1/4"	4 13/16	1 1/16	5/8	5 1/16	2 7/8	1/2	1 5/16	2 5/8	1 1/4	3/4	1/4-20N.C.
3/8"	4 13/16	1 1/32	5/8	5 7/8	3 11/16	5/8	1 3/4	3 1/2	1 1/4	1 1/4	5/16-18N.C.
1/2"	4 13/16	1 1/32	5/8	5 7/8	3 11/16	5/8	1 3/4	3 1/2	1 1/4	1 1/4	5/16-18N.C.
3/4"	7 3/4	1 9/16	9/16	8 21/32	5 9/16	1	2 1/2	5	1 3/8	7/8	5/16-18N.C.
1"	7 3/4	1 9/16	9/16	8 21/32	5 9/16	1	2 1/2	5	1 3/8	7/8	5/16-18N.C.

11ROAO3-MR

Spring Return

VALVE CHARACTERISTICS AND ORDERING DATA

Port Size N.P.T.	Free Air Flow at 100 P.S.I. CuFt/Min.	PRESSURE RANGE P.S.I.	VALVE NUMBER Normally Closed	VALVE NUMBER Normally Open	LIST PRICE	Shipping Weight Pounds
1/4"	70	0-250	11ROAC2-MR	11ROAO2-MR	37.40	1 3/4
3/8"	210	0-250	12ROAC2-MR	12ROAO2-MR	51.70	3 1/2
1/2"	210	0-250	13ROAC2-MR	13ROAO2-MR	56.10	3 1/2
3/4"	600	0-250	14ROAC2-MR	14ROAO2-MR	77.00	8 1/2
1"	600	0-250	15ROAC2-MR	15ROAO2-MR	81.40	8 1/2



DIMENSIONS

VALVE SIZE	A	B	C	D	E	F	G	H	J	K	L
1/4"	4 13/16	1 1/16	1	5 7/16	2 7/8	1/2	1 5/16	2 5/8	1 1/4	3/4	1/4-20N.C.
3/8"	4 13/16	1 1/32	1	6 1/4	3 11/16	5/8	1 3/4	3 1/2	1 1/4	1 1/4	5/16-18N.C.
1/2"	4 13/16	1 1/32	1	6 1/4	3 11/16	5/8	1 3/4	3 1/2	1 1/4	1 1/4	5/16-18N.C.
3/4"	7 3/4	1 9/16	1 1/4	9 11/32	5 9/16	1	2 1/2	5	1 3/8	7/8	5/16-18N.C.
1"	7 3/4	1 9/16	1 1/4	9 11/32	5 9/16	1	2 1/2	5	1 3/8	7/8	5/16-18N.C.

HOW THE CRESCENT® SOLENOID-

1. After the valve is connected in the line and before it is actuated, the following conditions exist:

   A. Air coming in the pressure port is passing through the valve and out Cylinder #2 port into one side of a double acting cylinder.

   B. The other cylinder port (#1) is open to the return line.

   C. There is no air in the pilot section of the valve since it is blocked.

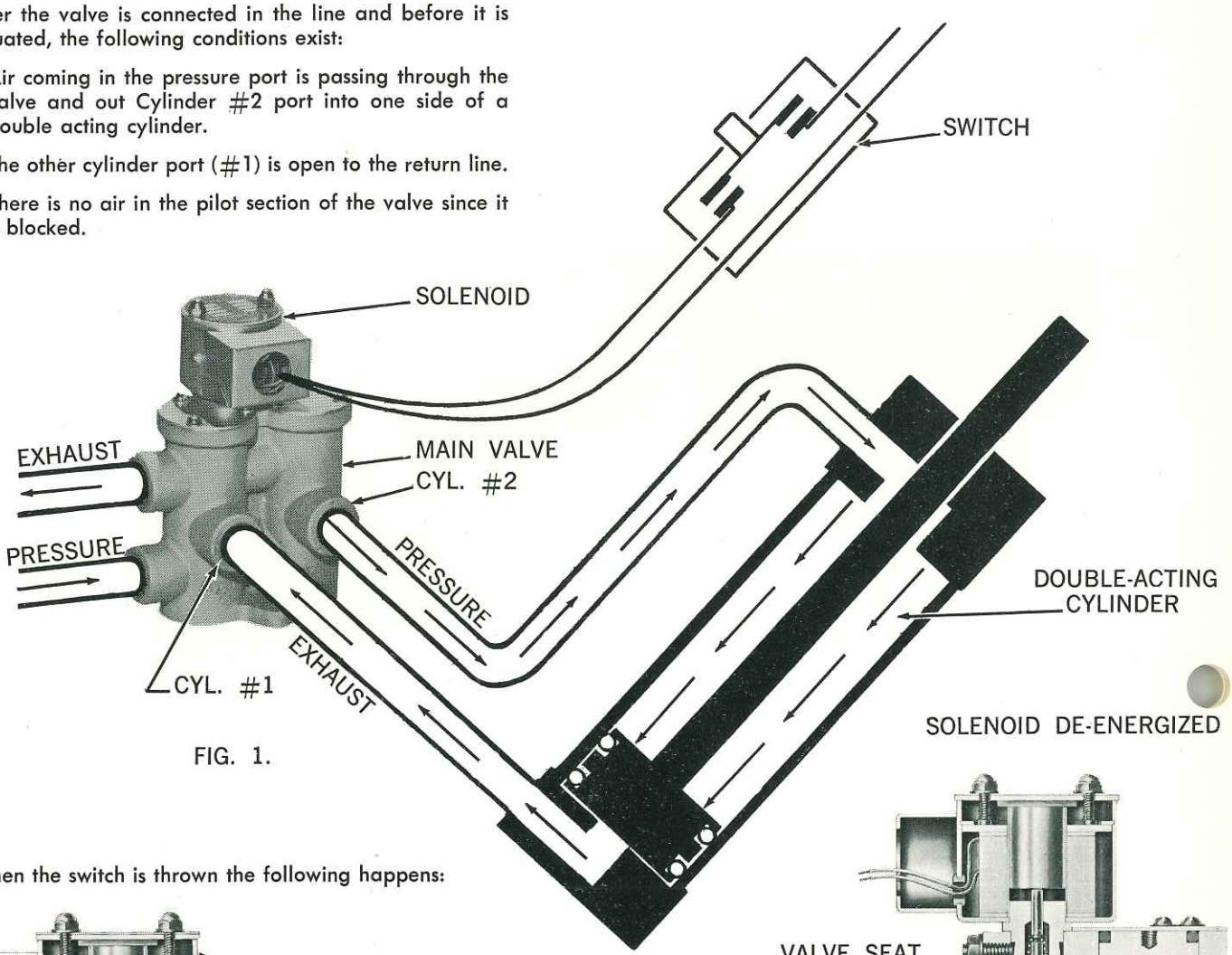
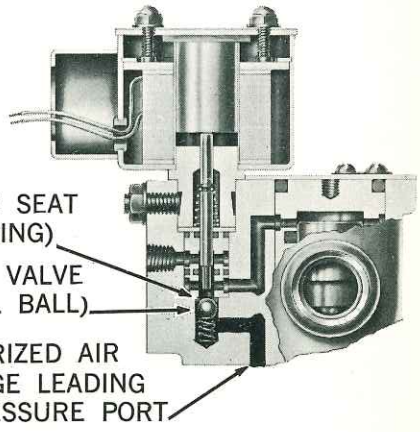


FIG. 1.

SOLENOID DE-ENERGIZED



2. When the switch is thrown the following happens:

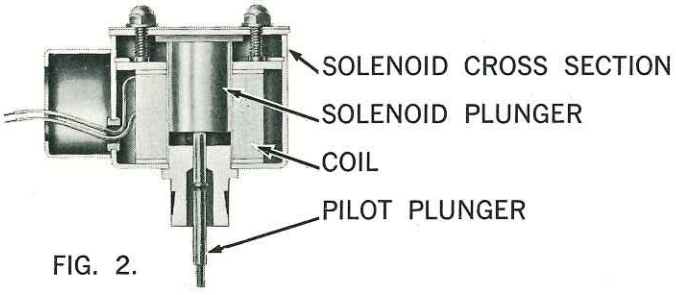


FIG. 2.

   A. The coil becomes energized.

   B. The solenoid plunger moves down.

   C. The solenoid plunger pushes the pilot plunger down, closing the pilot exhaust.

   D. The pilot plunger overcomes the pilot spring and pushes the pilot valve member (a stainless steel ball) off of the pilot valve seal (an "O" Ring).

   E. Air, which had been blocked by the pilot valve, now flows through the pilot valve to the top of the two main valve members.

SOLENOID ENERGIZED

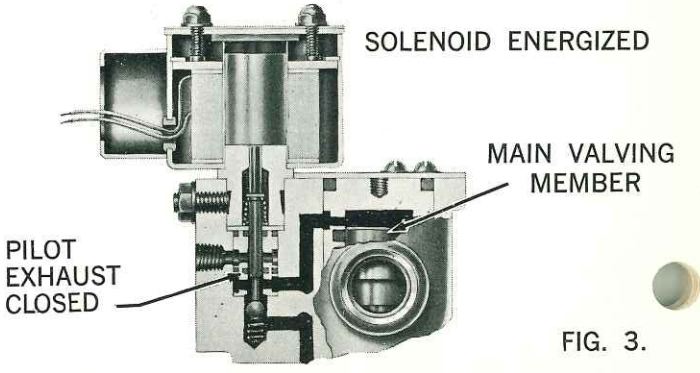


FIG. 3.

(OVER)

PILOT 4-WAY VALVE WORKS

Note that the main valve consists of two parallel bores, #2 with a normally open poppet, #1 with a normally closed poppet.

3. This pressure on top of the piston ends of the two main valve members forces them down until the integral poppets seat into the resilient valve seats; #2 sealing off pressure (at the bottom) and opening to exhaust; #1 closing exhaust port (at the top) and opening to pressure.

4. When the solenoid is de-energized:

A. The pilot plunger spring forces the pilot plunger and solenoid plunger upward, which allows the air on top of the two main valve members to exhaust to atmosphere. As this overriding downward pressure is released, the springs on the lower end of the main valve members force these parts up until the poppets seat into the resilient valve seats returning the valve to its original position. (#2 port open to pressure and #1 port open to exhaust.)

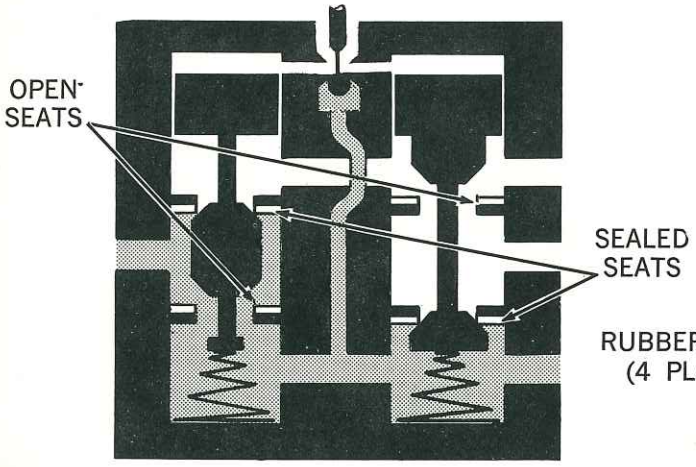


FIG. 4. SOLENOID DE-ENERGIZED

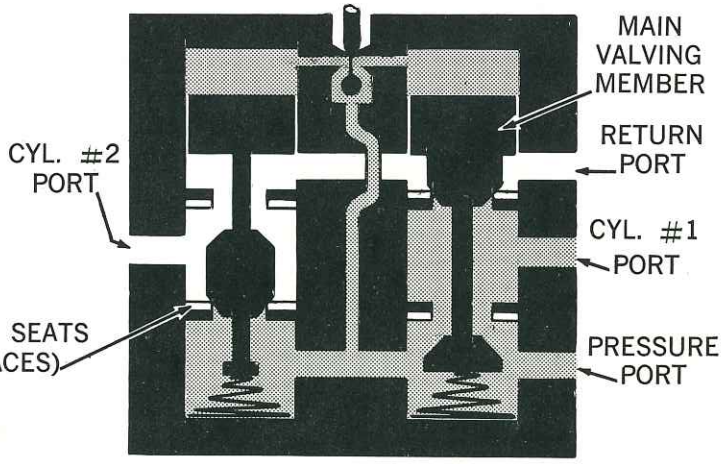


FIG. 5. SOLENOID ENERGIZED

For the convenience of showing the valve function in diagram form, the locations of the cylinder 1 and cylinder 2 ports have been rearranged, and the pilot action is shown in simplified form. For actual function and arrangement refer to the other illustrations on this and the preceding page.

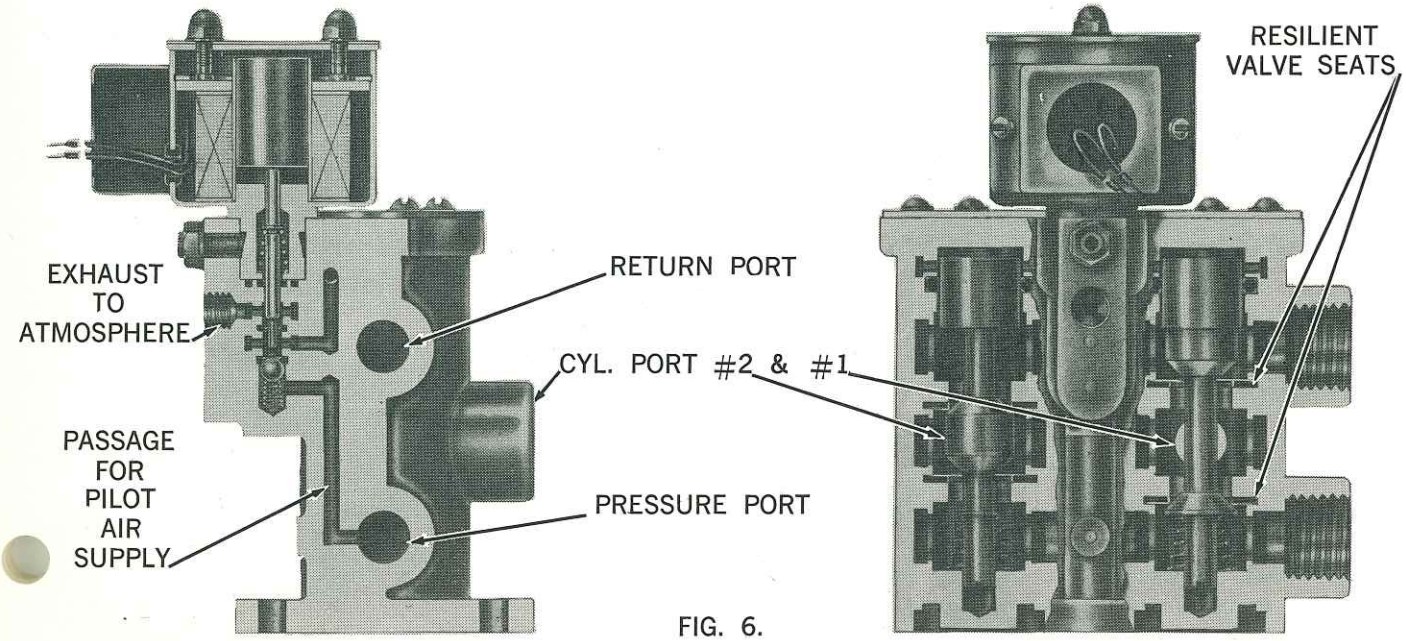
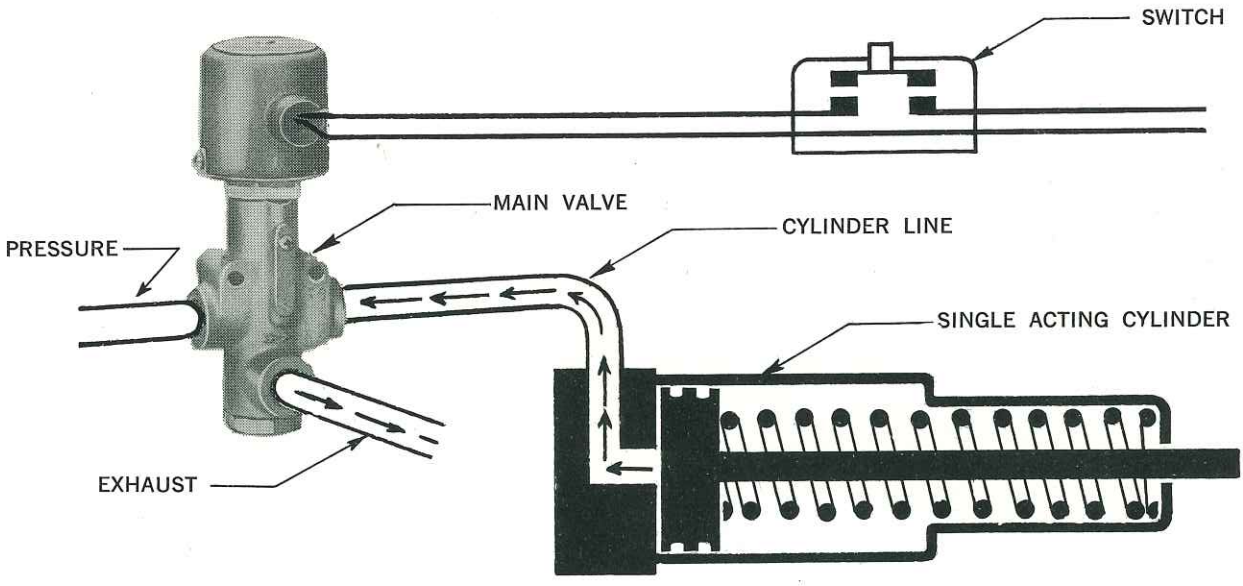


FIG. 6.

HOW THE CRESCENT® SOLENOID-

A typical application of the normally closed 3-Way valve is to actuate a single-acting cylinder.



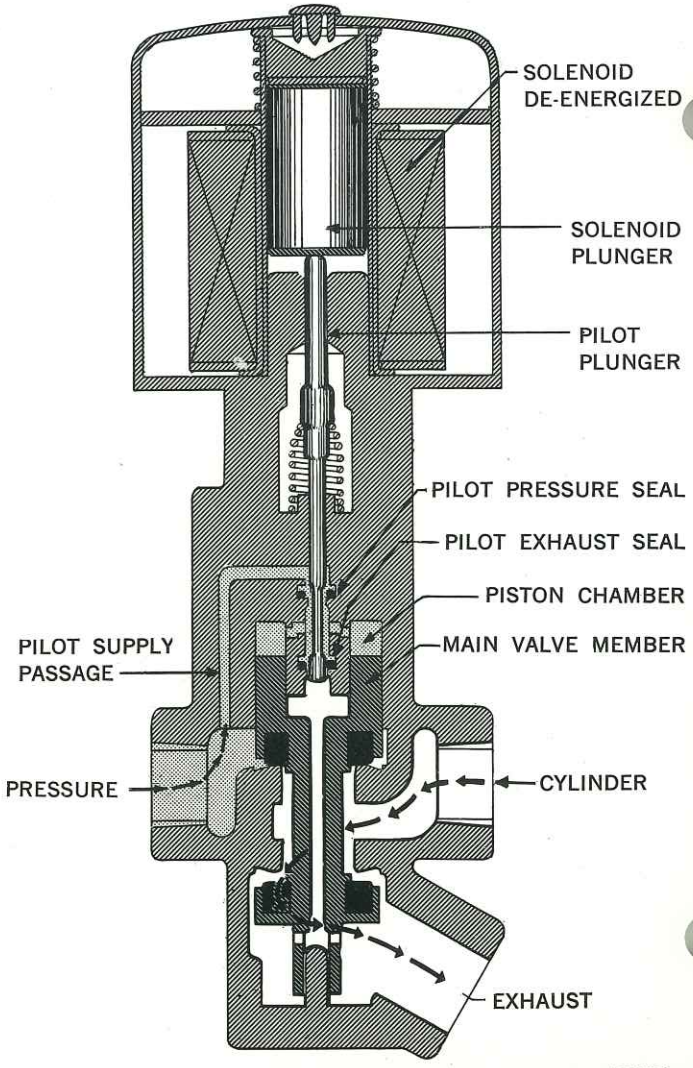
1. After the valve is connected in the line and *before* it is actuated, the following conditions exist:

   A. Air pressure from the main line inlet port enters through the pilot supply passage.

   B. Because the pilot pressure seal is open and the pilot exhaust seal is closed, the air pressure is directed into the piston chamber of the main valve member.

   C. This forces the main valve member down, blocking the main pressure supply and holding the cylinder line open to exhaust.

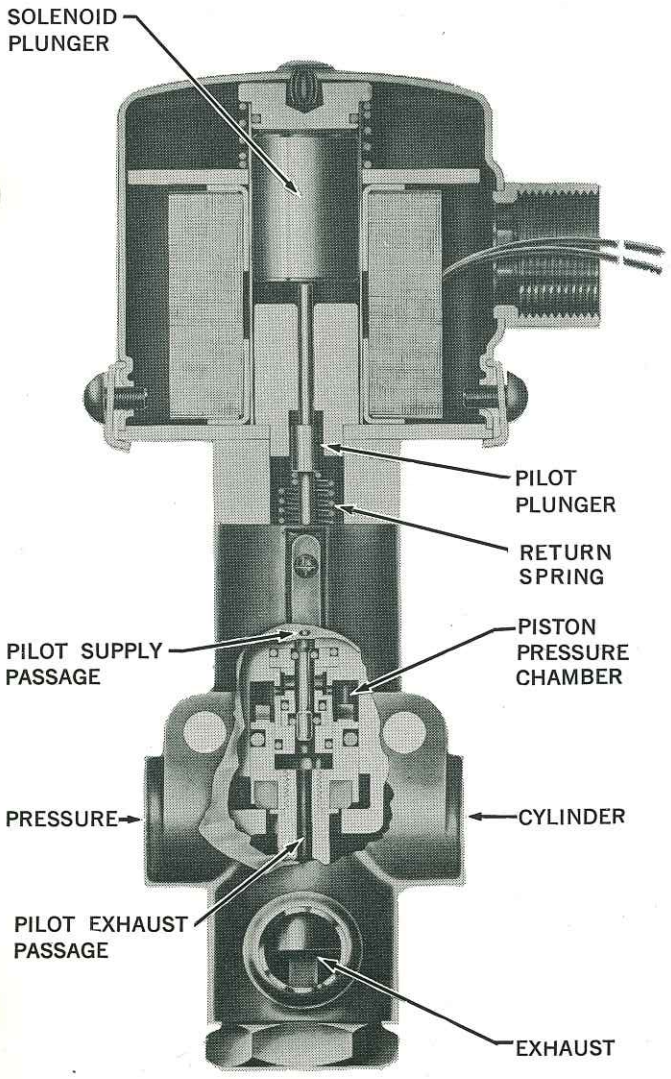
   (The return spring of the single-acting cylinder holds it in the retracted position.)

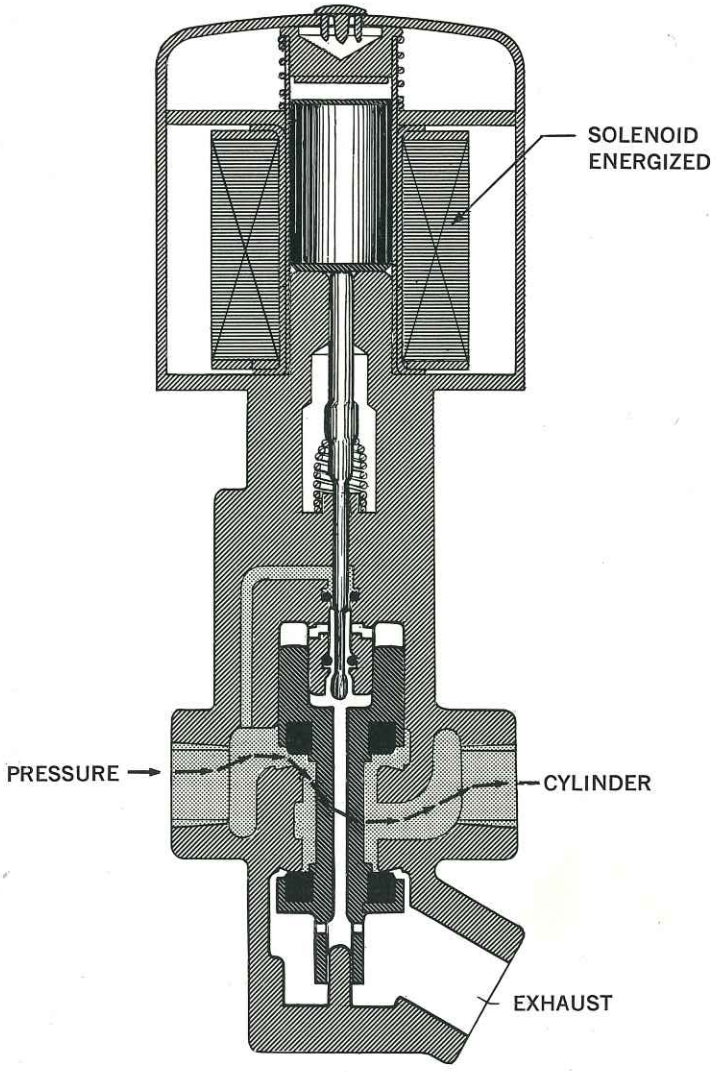


(OVER)

PILOT 3-WAY VALVE WORKS

2. When the switch is thrown the following happens:
   - A. The coil becomes energized.
   - B. The solenoid plunger moves down.
   - C. The solenoid plunger pushes the pilot plunger down.
   - D. This seals the pilot pressure seal and opens the pilot exhaust seal.
   - E. Air pressure in the piston end of the main valve member is allowed to escape through the pilot exhaust passage and out the main exhaust port.
   - F. The line pressure pushes the main valve member upward.
   - G. The lower main seal seats itself and blocks the exhaust port. At the same time the upper main seal opens, directing air pressure to the cylinder.





For the convenience of showing the valve function in diagram form, the locations of the pilot supply passage and the exhaust port have been rearranged. For actual function and arrangement refer to the illustration on the lower left of this page.

3. When the solenoid is de-energized:
   - A. The pilot plunger spring forces the pilot plunger and the solenoid plunger upward.
   - B. This seals the pilot exhaust seal and opens the pilot pressure seal, allowing pressure to enter piston chamber of main valve member.
   - C. Main valve member is forced down, again blocking main pressure line and opening cylinder port to exhaust.

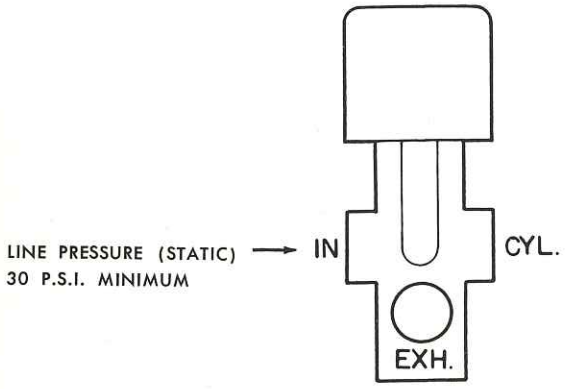
   (As the air pressure in the cylinder is dissipated through the main exhaust port, the cylinder spring returns it to the retracted position.)

3-WAY • SOLENOID-PILOT • 30 to 150 P.S.I. • CRESCENT® VALVES

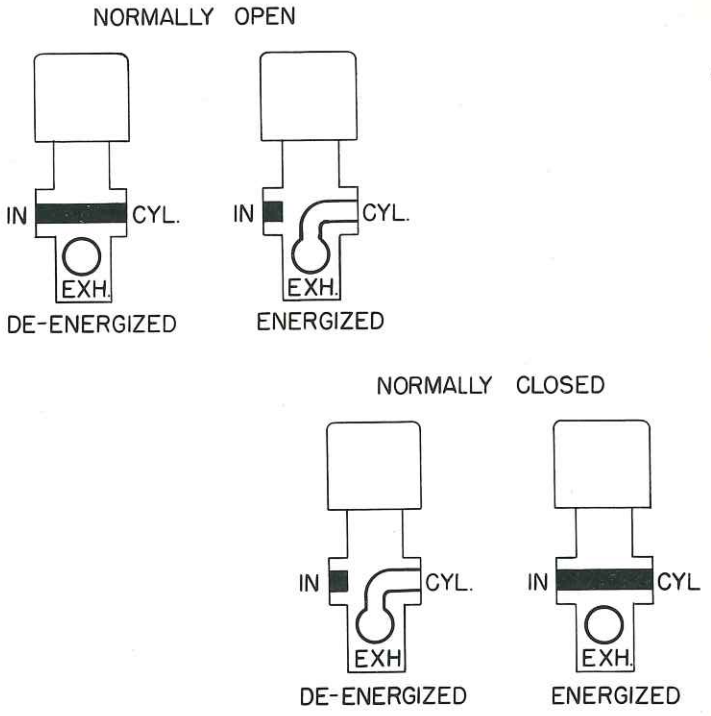
INTEGRAL PILOT

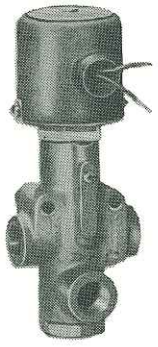
On models 1034, 1034 MK and 1037 pressure supply to operate the pilot section is directed through internal channels leading from the main line pressure inlet.

Pilot exhaust is internally channelled to main exhaust. For these reasons the line pressure must be 30 P.S.I. or over.



FLOW PATTERNS OF 3-WAY VALVES





103431

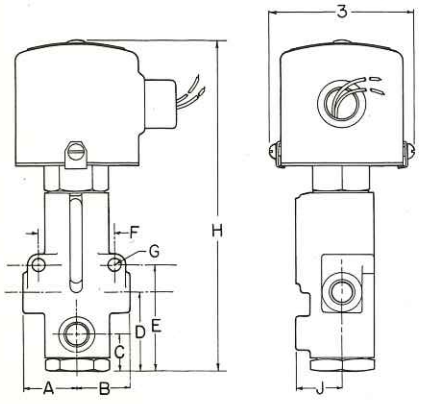
1034 Series • 2 Position Standard Solenoid

VALVE CHARACTERISTICS AND ORDERING DATA

IMPORTANT: When ordering please specify: Size, Ordering Number, Pressure Range, Voltage and Frequency.

Pipe Size (I.P.S.)	Free Air Flow at 100 P.S.I. CuFt/Min.	PRESSURE RANGE (P.S.I.)	ORDERING NUMBERS		LIST PRICE	Shipping Weight Pounds
			Normally Open	Normally Closed		
1/4"	77	30-150	103421	103422	38.75	3 3/4
3/8"	165	30-150	103431	103432	40.00	4 1/2
1/2"	269	30-150	103441	103442	43.60	5
3/4"	438	30-150	103461	103462	50.00	6

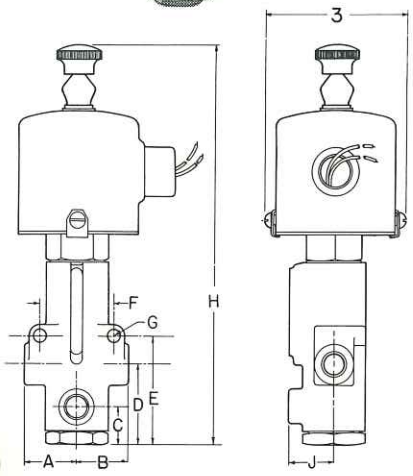
STANDARD VOLTAGES: 24, 115, 230 or 460 Volts, 60 Cycles AC; 115 or 230V, 30C; 115V, 50C. Class B coils supplied for all DC voltages: For 6, 12 or 24V DC, Add $2.50 List. For other voltages and frequencies consult Factory, stating lot quantity involved.



DIMENSIONS

VALVE SIZE	A	B	C	D	E	F	G	H	J
1/4"	1 1/16	1 3/16	29/32	1 13/16	2 15/32	1 7/16	1 7/64	7 1/16	1 1/16
3/8"	1 1/4	1 7/16	1	2 3/32	2 7/8	1 1/2	2 1/64	7 5/16	1 9/32
1/2"	1 3/8	1 1/2	1 3/32	2 7/32	3 1/32	1 5/8	2 1/64	7 19/32	1 5/16
3/4"	1 9/16	1 11/16	1 9/32	2 3/4	3 23/32	1 13/16	2 1/64	8 1/4	1 19/32

103431MK



1034 Series • MK Manual Override

VALVE CHARACTERISTICS AND ORDERING DATA Specify Locking or Non-Locking

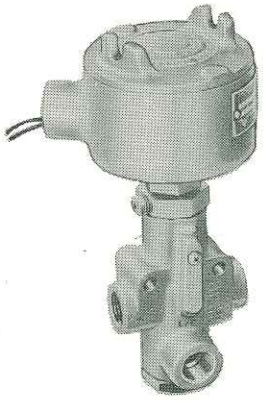
IMPORTANT: When ordering please specify: Size, Ordering Number, Pressure Range, Voltage and Frequency.

Pipe Size (I.P.S.)	Free Air Flow at 100 P.S.I. CuFt/Min.	PRESSURE RANGE (P.S.I.)	ORDERING NUMBERS		LIST PRICE		Shipping Weight Pounds
			Normally Open	Normally Closed	Non-Locking	Locking	
1/4"	77	30-150	103421MK	103422MK	40.90	41.40	3 3/4
3/8"	165	30-150	103431MK	103432MK	42.15	42.65	4 1/2
1/2"	269	30-150	103441MK	103442MK	45.75	46.25	5
3/4"	438	30-150	103461MK	103462MK	52.15	52.65	6

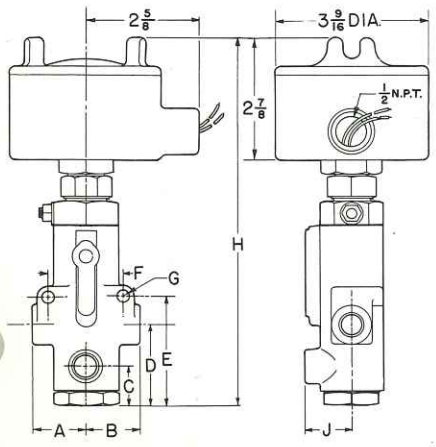
STANDARD VOLTAGES: 24, 115, 230 or 460 Volts, 60 Cycles AC; 115 or 230V, 30C; 115V, 50C. Class B coils supplied for all DC voltages: For 6, 12 or 24V DC, Add $2.50 List. For other voltages and frequencies consult Factory, stating lot quantity involved.

DIMENSIONS

VALVE SIZE	A	B	C	D	E	F	G	H	J
1/4"	1 1/16	1 3/16	29/32	1 13/16	2 15/32	1 7/16	17/64	8	1 1/16
3/8"	1 1/4	1 7/16	1	2 3/32	2 7/8	1 1/2	21/64	8 1/4	1 9/32
1/2"	1 3/8	1 1/2	1 3/32	2 7/32	3 1/32	1 5/8	21/64	8 9/32	1 5/16
3/4"	1 9/16	1 11/16	1 9/32	2 3/4	3 23/32	1 13/16	21/64	9 1/4	1 19/32



103731



1037 Series • Explosion-Proof Solenoid

VALVE CHARACTERISTICS AND ORDERING DATA

IMPORTANT: When ordering please specify: Size, Ordering Number, Pressure Range, Voltage and Frequency.

Pipe Size (I.P.S.)	Free Air Flow at 100 P.S.I. CuFt/Min.	PRESSURE RANGE (P.S.I.)	ORDERING NUMBERS		LIST PRICE	Shipping Weight Pounds
			Normally Open	Normally Closed		
1/4"	77	30-150	103721	103722	56.20	5 1/2
3/8"	165	30-150	103731	103732	57.60	6 1/4
1/2"	269	30-150	103741	103742	60.50	6 1/2
3/4"	438	30-150	103761	103762	68.60	7 1/2

STANDARD VOLTAGES: 24, 115, 230, 460 or 550 Volts, 60 Cycles AC; 115 or 230V, 25C; 115 or 230V, 30C; 115, 230 or 460V, 50C. Class B coils supplied for all DC voltages: For 6, 12 or 24 Volts DC, Add $1.50 List. For other voltages and frequencies consult Factory, stating lot quantity involved.

DIMENSIONS

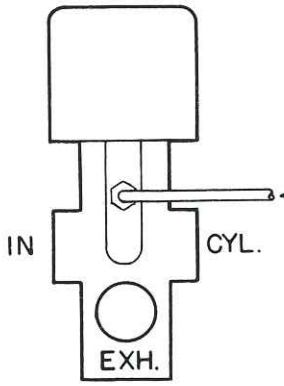
VALVE SIZE	A	B	C	D	E	F	G	H	J
1/4"	1 1/16	1 3/16	29/32	1 13/16	2 15/32	1 7/16	17/64	8 5/16	1 1/16
3/8"	1 1/4	1 7/16	1	2 3/32	2 7/8	1 1/2	21/64	8 9/16	1 9/32
1/2"	1 3/8	1 1/2	1 3/32	2 7/32	3 1/32	1 5/8	21/64	8 27/32	1 5/16
3/4"	1 9/16	1 11/16	1 9/32	2 3/4	3 23/32	1 13/16	21/64	9 1/2	1 19/32

3-WAY • SOLENOID-PILOT • 0 to 150 P.S.I. • CRESCENT® VALVES

EXTERNAL PILOT SUPPLY

Used principally to control:
1) Gaseous fluids under 30 psi
2) Gaseous fluids to 150 psi which have very low flow.
3) Liquids from 0 to 150 psi

If the medium passing through the main valve is other than air, the medium supplying the pilot pressure must be the same as in the main line.



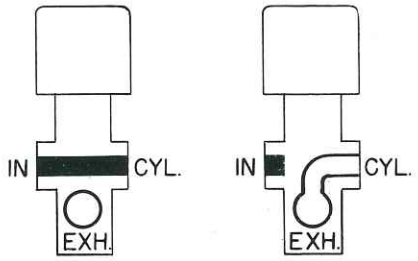
PILOT PRESS

IF MAIN LINE PRESSURE (STATIC) IS LESS THAN 30 P.S.I., EXTERNAL PILOT PRESSURE MUST BE 30 P.S.I.

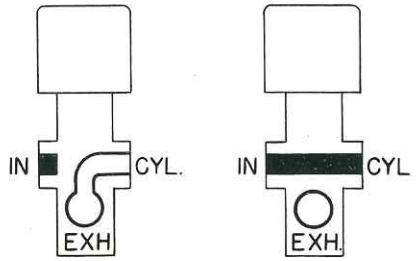
IF MAIN LINE PRESSURE (STATIC) IS GREATER THAN 30 P.S.I. THE PILOT PRESSURE SHOULD NOT BE LESS THAN MAIN LINE PRESSURE NOR MORE THAN 35 P.S.I. ABOVE MAIN LINE PRESSURE.

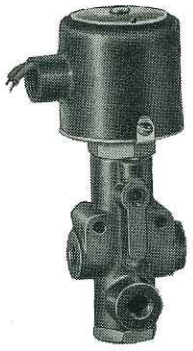
FLOW PATTERNS OF 3-WAY VALVES

NORMALLY OPEN



NORMALLY CLOSED





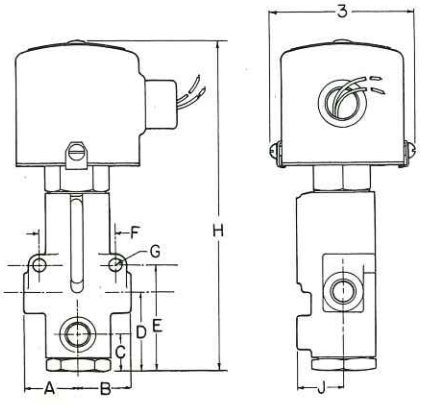
103821

1038 Series • 2 Position Standard Solenoid

VALVE CHARACTERISTICS AND ORDERING DATA

IMPORTANT: When ordering please specify: Size, Ordering Number, Pressure Range, Voltage and Frequency.

Pipe Size (I.P.S.)	Free Air Flow at 100 P.S.I. CuFt/Min.	PRESSURE RANGE (P.S.I.)	ORDERING NUMBERS		LIST PRICE	Shipping Weight Pounds
			Normally Open	Normally Closed		
1/4"	77	0-150	103821	103822	38.75	3 3/4
3/8"	165	0-150	103831	103832	40.00	4 1/2
1/2"	269	0-150	103841	103842	43.60	5
3/4"	438	0-150	103861	103862	50.00	6



STANDARD VOLTAGES: 24, 115, 230 or 460 Volts, 60 Cycles AC; 115 or 230V, 30C; 115V, 50C. Class B coils supplied for all DC voltages: For 6, 12 or 24V DC, Add $2.50 List. For other voltages and frequencies consult Factory, stating lot quantity involved.

DIMENSIONS

VALVE SIZE	A	B	C	D	E	F	G	H	J
1/4"	1 1/16	1 3/16	29/32	1 13/16	2 15/32	1 7/16	17/64	7 1/16	1 1/16
3/8"	1 1/4	1 7/16	1	2 3/32	2 7/8	1 1/2	21/64	7 5/16	1 9/32
1/2"	1 3/8	1 1/2	1 3/32	2 7/32	3 1/32	1 5/8	21/64	7 19/32	1 5/16
3/4"	1 9/16	1 11/16	1 9/32	2 3/4	3 23/32	1 13/16	21/64	8 1/4	1 19/32

103832MK

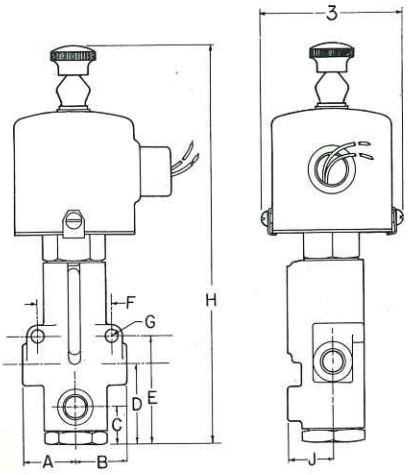
1038 Series • MK Manual Override

VALVE CHARACTERISTICS AND ORDERING DATA Specify Locking or Non-Locking

IMPORTANT: When ordering please specify: Size, Ordering Number, Pressure Range, Voltage and Frequency.

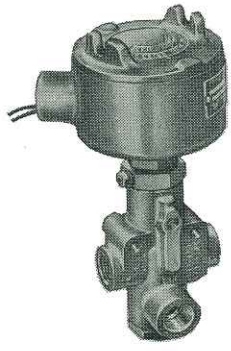
Pipe Size (I.P.S.)	Free Air Flow at 100 P.S.I. CuFt/Min.	PRESSURE RANGE (P.S.I.)	ORDERING NUMBERS		LIST PRICE		Shipping Weight Pounds
			Normally Open	Normally Closed	Non-Locking	Locking	
1/4"	77	0-150	103821MK	103822MK	40.90	41.40	3 3/4
3/8"	165	0-150	103831MK	103832MK	42.15	42.65	4 1/2
1/2"	269	0-150	103841MK	103842MK	45.75	46.25	5
3/4"	438	0-150	103861MK	103862MK	52.15	52.65	6

STANDARD VOLTAGES: 24, 115, 230 or 460 Volts, 60 Cycles AC; 115 or 230V, 30C; 115V, 50C. Class B coils supplied for all DC voltages: For 6, 12 or 24V DC, Add $2.50 List. For other voltages and frequencies consult Factory, stating lot quantity involved.



DIMENSIONS

VALVE SIZE	A	B	C	D	E	F	G	H	J
1/4"	1 1/16	1 3/16	29/32	1 13/16	2 15/32	1 7/16	1 7/64	8	1 1/16
3/8"	1 1/4	1 7/16	1	2 3/32	2 7/8	1 1/2	2 1/64	8 1/4	1 9/32
1/2"	1 3/8	1 1/2	1 3/32	2 7/32	3 1/32	1 5/8	2 1/64	8 9/32	1 5/16
3/4"	1 9/16	1 11/16	1 9/32	2 3/4	3 23/32	1 13/16	2 1/64	9 1/4	1 19/32



103931

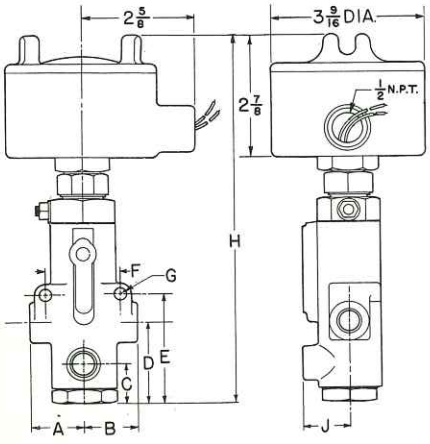
1039 Series • Explosion-Proof Solenoid

VALVE CHARACTERISTICS AND ORDERING DATA

IMPORTANT: When ordering please specify: Size, Ordering Number, Pressure Range, Voltage and Frequency.

Pipe Size (I.P.S.)	Free Air Flow at 100 P.S.I. CuFt/Min.	PRESSURE RANGE (P.S.I.)	ORDERING NUMBERS		LIST PRICE	Shipping Weight Pounds
			Normally Open	Normally Closed		
1/4"	77	0-150	103921	103922	56.20	5 1/2
3/8"	165	0-150	103931	103932	57.60	6 1/4
1/2"	269	0-150	103941	103942	60.50	6 1/2
3/4"	438	0-150	103961	103962	68.60	7 1/2

STANDARD VOLTAGES: 24, 115, 230, 460 or 550 Volts, 60 Cycles AC; 115 or 230V, 25C; 115 or 230V, 30C; 115, 230 or 460V, 50C. Class B coils supplied for all DC voltages: For 6, 12 or 24 Volts DC, Add $1.50 List. For other voltages and frequencies consult Factory, stating lot quantity involved.



DIMENSIONS

VALVE SIZE	A	B	C	D	E	F	G	H	J
1/4"	1 1/16	1 3/16	29/32	1 13/16	2 15/32	1 7/16	1 7/64	8 5/16	1 1/16
3/8"	1 1/4	1 7/16	1	2 3/32	2 7/8	1 1/2	2 1/64	8 9/16	1 9/32
1/2"	1 3/8	1 1/2	1 3/32	2 7/32	3 1/32	1 5/8	2 1/64	8 27/32	1 5/16
3/4"	1 9/16	1 11/16	1 9/32	2 3/4	3 23/32	1 13/16	2 1/64	9 1/2	1 19/32

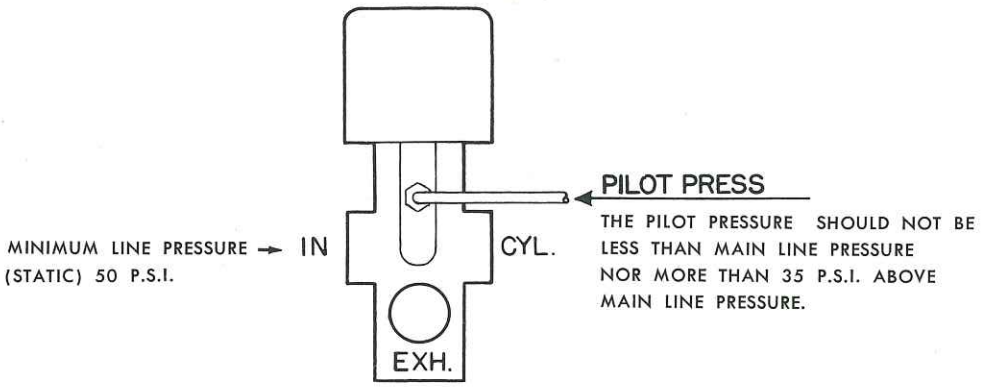
3-WAY • SOLENOID-PILOT • 50 to 500 P.S.I. • CRESCENT® VALVES

EXTERNAL PILOT SUPPLY

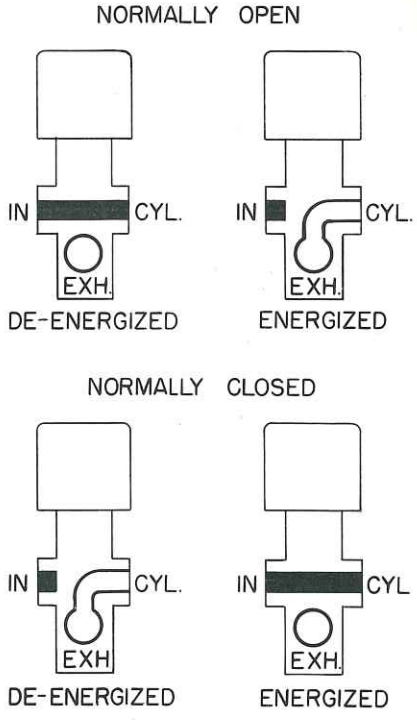
Used principally to control:

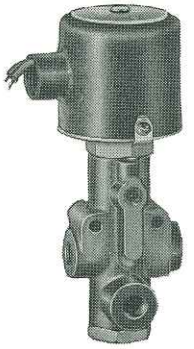
1) Gaseous fluids to 500 psi which have very low flow.
2) Liquids from 50 to 500 psi

If the medium passing through the main valve is other than air, the medium supplying the pilot pressure must be the same as in the main line.


MINIMUM LINE PRESSURE
(STATIC) 50 P.S.I.
IN
CYL.
EXH.
PILOT PRESS
THE PILOT PRESSURE SHOULD NOT BE LESS THAN MAIN LINE PRESSURE NOR MORE THAN 35 P.S.I. ABOVE MAIN LINE PRESSURE.

FLOW PATTERNS OF 3-WAY VALVES





103825

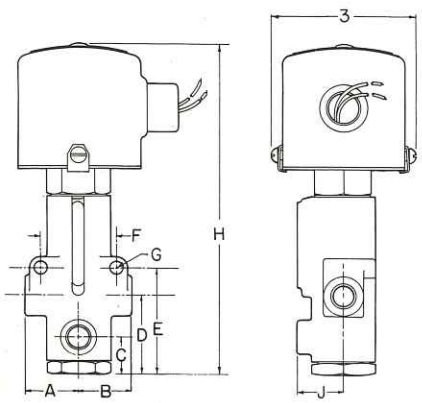
A 1038 Series • 2 Position Standard Solenoid

VALVE CHARACTERISTICS AND ORDERING DATA

IMPORTANT: When ordering please specify: Size, Ordering Number, Pressure Range, Voltage and Frequency.

Pipe Size (I.P.S.)	Free Air Flow at 100 P.S.I. CuFt/Min.	PRESSURE RANGE (P.S.I.)	ORDERING NUMBERS		LIST PRICE	Shipping Weight Pounds
			Normally Open	Normally Closed		
1/4"	77	50-500	103825	103826	41.75	3 3/4
3/8"	165	50-500	103835	103836	43.50	4 1/2
1/2"	269	50-500	103843	103844	47.60	5
3/4"	438	50-500	103863	103864	54.50	6

STANDARD VOLTAGES: 24, 115, 230 or 460 Volts, 60 Cycles AC; 115 or 230V, 30C; 115V, 50C. Class B coils supplied for all DC voltages: For 6, 12 or 24V DC, Add $2.50 List. For other voltages and frequencies consult Factory, stating lot quantity involved.



DIMENSIONS

VALVE SIZE	A	B	C	D	E	F	G	H	J
1/4"	1 1/16	1 3/16	29/32	1 13/16	2 15/32	1 7/16	1 7/64	7 1/16	1 1/16
3/8"	1 1/4	1 7/16	1	2 3/32	2 7/8	1 1/2	2 1/64	7 5/16	1 9/32
1/2"	1 3/8	1 1/2	1 3/32	2 7/32	3 1/32	1 5/8	2 1/64	7 19/32	1 5/16
3/4"	1 9/16	1 11/16	1 9/32	2 3/4	3 23/32	1 13/16	2 1/64	8 1/4	1 19/32

A103835MK

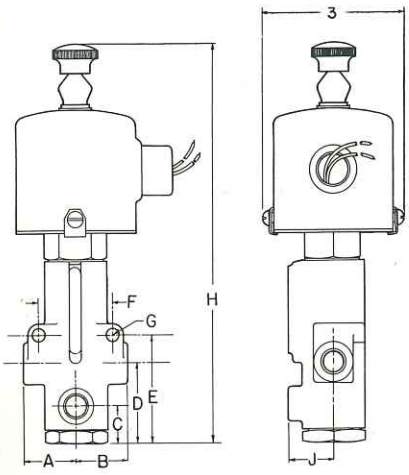
A 1038 Series • MK Manual Override

VALVE CHARACTERISTICS AND ORDERING DATA Specify Locking or Non-Locking

IMPORTANT: When ordering please specify: Size, Ordering Number, Pressure Range, Voltage and Frequency.

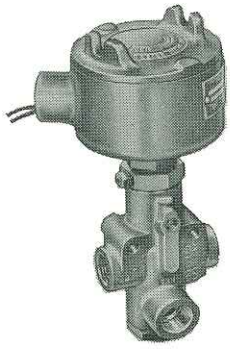
Pipe Size (I.P.S.)	Free Air Flow at 100 P.S.I. CuFt/Min.	PRESSURE RANGE (P.S.I.)	ORDERING NUMBERS		LIST PRICE		Shipping Weight Pounds
			Normally Open	Normally Closed	Non-Locking	Locking	
1/4"	77	50-500	103825MK	103826MK	43.90	44.40	3 3/4
3/8"	165	50-500	103835MK	103836MK	45.65	46.15	4 1/2
1/2"	269	50-500	103843MK	103844MK	49.75	50.25	5
3/4"	348	50-500	103863MK	103864MK	56.65	57.15	6

STANDARD VOLTAGES: 24, 115, 230 or 460 Volts, 60 Cycles AC; 115 or 230V, 30C; 115V, 50C. Class B coils supplied for all DC voltages: For 6, 12 or 24V DC, Add $2.50 List. For other voltages and frequencies consult Factory, stating lot quantity involved.



DIMENSIONS

VALVE SIZE	A	B	C	D	E	F	G	H	J
1/4"	1 1/16	1 3/16	29/32	1 13/16	2 15/32	1 7/16	17/64	8	1 1/16
3/8"	1 1/4	1 7/16	1	2 3/32	2 7/8	1 1/2	21/64	8 1/4	1 9/32
1/2"	1 3/8	1 1/2	1 3/32	2 7/32	3 1/32	1 5/8	21/64	8 9/32	1 5/16
3/4"	1 9/16	1 11/16	1 9/32	2 3/4	3 23/32	1 13/16	21/64	9 1/4	1 19/32



A103935

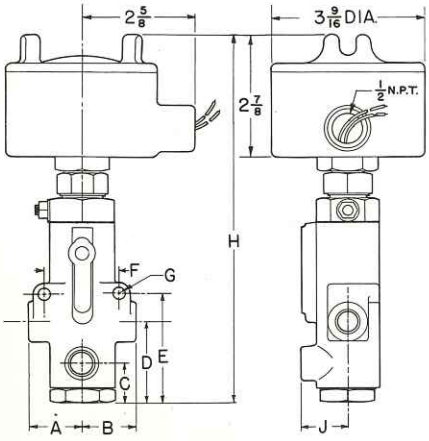
A 1039 Series • Explosion-Proof Solenoid

VALVE CHARACTERISTICS AND ORDERING DATA

IMPORTANT: When ordering please specify: Size, Ordering Number, Pressure Range, Voltage and Frequency.

Pipe Size (I.P.S.)	Free Air Flow at 100 P.S.I. CuFt/Min.	PRESSURE RANGE (P.S.I.)	ORDERING NUMBERS		LIST PRICE	Shipping Weight Pounds
			Normally Open	Normally Closed		
1/4"	77	50-500	103925	103926	59.20	5 1/2
3/8"	165	50-500	103935	103936	61.10	6 1/4
1/2"	269	50-500	103943	103944	64.50	6 1/2
3/4"	438	50-500	103963	103964	73.10	7 1/2

STANDARD VOLTAGES: 24, 115, 230, 460 or 550 Volts, 60 Cycles AC; 115 or 230V, 25C; 115 or 230V, 30C; 115, 230 or 460V, 50C. Class B coils supplied for all DC voltages: For 6, 12 or 24 Volts DC, Add $1.50 List. For other voltages and frequencies consult Factory, stating lot quantity involved.



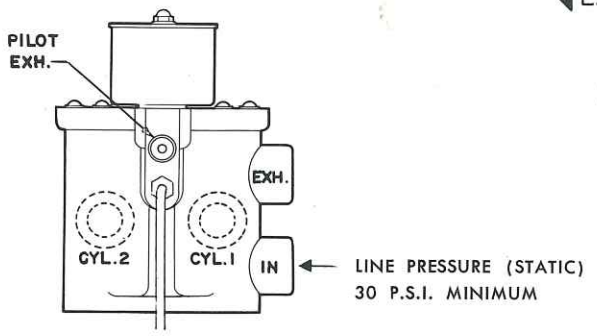
DIMENSIONS

VALVE SIZE	A	B	C	D	E	F	G	H	J
1/4"	1 1/16	1 3/16	29/32	1 13/16	2 15/32	1 7/16	17/64	8 5/16	1 1/16
3/8"	1 1/4	1 7/16	1	2 3/32	2 7/8	1 1/2	21/64	8 9/16	1 9/32
1/2"	1 3/8	1 1/2	1 3/32	2 7/32	3 1/32	1 5/8	21/64	8 27/32	1 5/16
3/4"	1 9/16	1 11/16	1 9/32	2 3/4	3 23/32	1 13/16	21/64	9 1/2	1 19/32

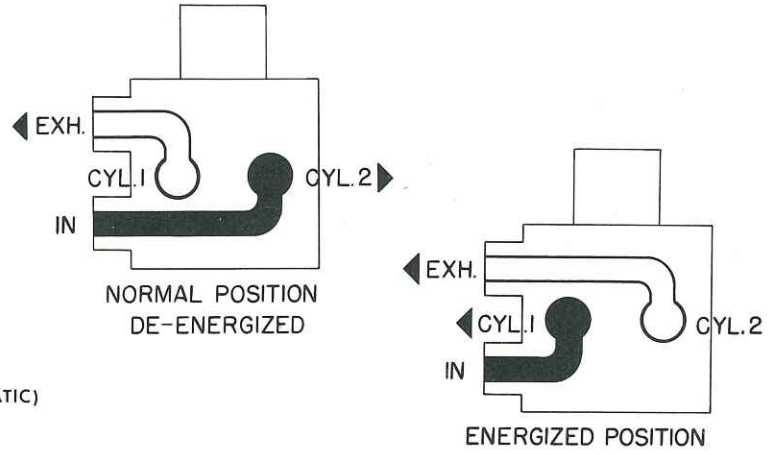
4-WAY • SOLENOID-PILOT OPERATED • 30 to 150 P.S.I. • CRESCENT® VALVES

Type AH

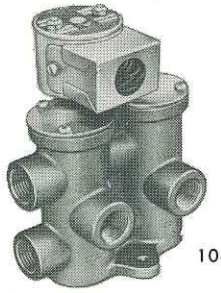
INTEGRAL PILOT



FLOW PATTERN OF 4-WAY VALVES



1046 AH Series • 2 Position • Standard Solenoid

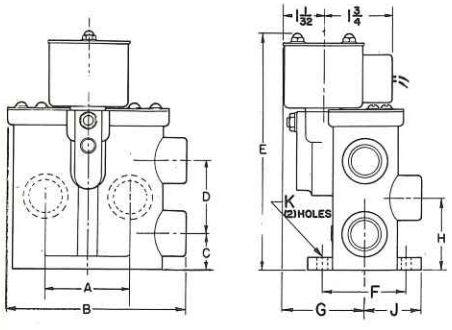

10463AH

VALVE CHARACTERISTICS AND ORDERING DATA

IMPORTANT: When ordering please specify: Size, Ordering Number, Pressure Range, Voltage and Frequency.

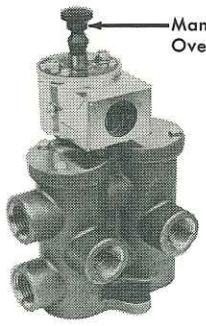
Pipe Size (I.P.S.)	Free Air Flow at 100 P.S.I. CuFt/Min.	PRESSURE RANGE (P.S.I.)	ORDERING NUMBER	LIST PRICE	Shipping Weight Pounds
1/4"	44	30-150	10462AH	45.15	4½
3/8"	99	30-150	10463AH	51.35	5½
1/2"	221	30-150	10464AH	59.75	7
3/4"	417	30-150	10465AH	85.00	11½

STANDARD VOLTAGES: 24, 115, 230, 460 or 550 Volts, 60 Cycles AC; 115 or 230V, 25C; 115 or 230V, 30C; 115, 230 or 460V, 50C; 6, 12 or 24V DC. For other voltages and frequencies consult Factory, stating lot quantity involved.



DIMENSIONS

VALVE SIZE	A	B	C	D	E	F	G	H	J	K
1/4"	1 9/16	3 13/32	2 5/32	1 1/4	5	1 11/16	1 15/16	1 7/16	1 1/16	9/32
3/8"	1 13/16	3 29/32	2 5/32	1 9/16	5 13/32	1 15/16	2	1 17/32	1 1/4	9/32
1/2"	2 1/8	4 17/32	1 5/16	1 27/32	5 7/8	2 1/8	2 1/16	1 27/32	1 7/16	9/32
3/4"	2 3/4	5 21/32	1 1/16	2 13/32	6 27/32	2 9/16	2 1/4	2 1/4	1 3/4	9/32



10463AHMK

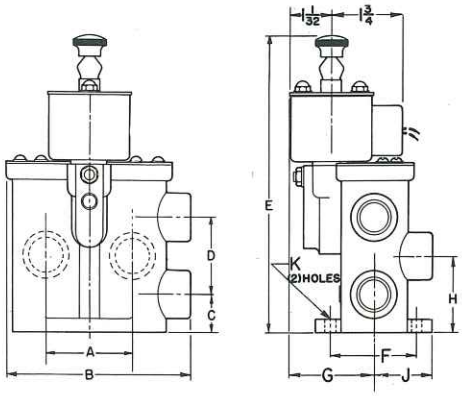
1046 AH Series • MK Manual Override

VALVE CHARACTERISTICS AND ORDERING DATA Specify Locking or Non-Locking

IMPORTANT: When ordering please specify: Size, Ordering Number, Pressure Range, Voltage and Frequency.

Pipe Size (I.P.S.)	Free Air Flow at 100 P.S.I. CuFt/Min.	PRESSURE RANGE (P.S.I.)	ORDERING NUMBER	LIST PRICE		Shipping Weight Pounds
				Non-Locking Manual Override	Locking Manual Override	
1/4"	44	30-150	10462AHMK	47.00	47.65	4 1/2
3/8"	99	30-150	10463AHMK	53.20	53.85	5 1/2
1/2"	221	30-150	10464AHMK	61.60	62.25	7
3/4"	417	30-150	10465AHMK	86.85	87.50	11 1/2

STANDARD VOLTAGES: 24, 115, 230, 460 or 550 Volts, 60 Cycles AC; 115 or 230V, 25C; 115 or 230V, 30C; 115, 230 or 460V, 50C; 6, 12 or 24V DC. For other voltages and frequencies consult Factory, stating lot quantity involved.



DIMENSIONS

VALVE SIZE	A	B	C	D	E	F	G	H	J	K
1/4"	1 9/16	3 13/32	25/32	1 1/4	6 13/64	1 11/16	1 15/16	1 7/16	1 1/16	9/32
3/8"	1 13/16	3 29/32	25/32	1 9/16	6 19/32	1 15/16	2	1 17/32	1 1/4	9/32
1/2"	2 1/8	4 17/32	15/16	1 27/32	7 1/16	2 1/8	2 1/16	1 27/32	1 7/16	9/32
3/4"	2 3/4	5 21/32	1 1/16	2 13/32	8 1/32	2 9/16	2 1/4	2 1/4	1 3/4	9/32

10463AHL

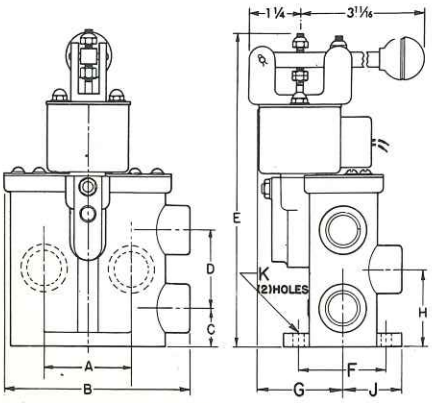
1046 AH Series • L Manual Override

VALVE CHARACTERISTICS AND ORDERING DATA

IMPORTANT: When ordering please specify: Size, Ordering Number, Pressure Range, Voltage and Frequency.

Pipe Size (I.P.S.)	Free Air Flow at 100 P.S.I. CuFt/Min.	PRESSURE RANGE (P.S.I.)	ORDERING NUMBER	LIST PRICE	Shipping Weight Pounds
1/4"	44	30-150	10462AHL	51.40	5 1/4
3/8"	99	30-150	10463AHL	57.60	6 1/4
1/2"	221	30-150	10464AHL	66.00	7 3/4
3/4"	417	30-150	10465AHL	91.25	12 1/4

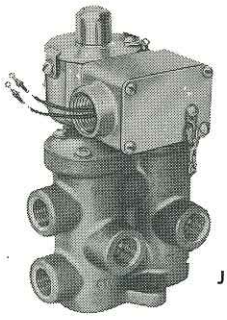
STANDARD VOLTAGES: 24, 115, 230, 460 or 550 Volts, 60 Cycles AC; 115 or 230V, 25C; 115 or 230V, 30C; 115, 230 or 460V, 50C; 6, 12 or 24V DC. For other voltages and frequencies consult Factory, stating lot quantity involved.



DIMENSIONS

VALVE SIZE	A	B	C	D	E	F	G	H	J	K
1/4"	1 9/16	3 13/32	25/32	1 1/4	6 29/64	1 11/16	1 15/16	1 7/16	1 1/16	9/32
3/8"	1 13/16	3 29/32	25/32	1 9/16	6 27/32	1 15/16	2	1 17/32	1 1/4	9/32
1/2"	2 1/8	4 17/32	15/16	1 27/32	7 21/64	2 1/8	2 1/16	1 27/32	1 7/16	9/32
3/4"	2 3/4	5 21/32	1 1/16	2 13/32	8 9/32	2 9/16	2 1/4	2 1/4	1 3/4	9/32

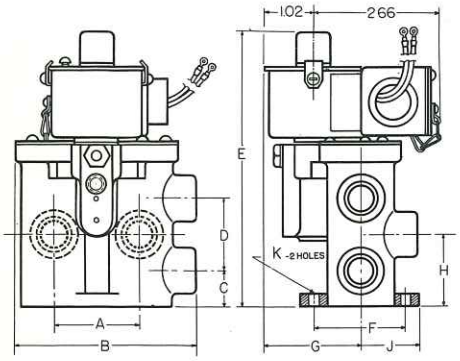
TYPE AH



J10463AH

*SOLENOIDS DESIGNED TO J.I.C. SPECIFICATIONS.

The solenoid is inoperative when the cover is removed and there is a manual override which is safe against accidental actuation. The conduit connector is threaded and the pressure ring terminals are on 6" free leads. Captive cover plates protect the solenoid and junction box to seal them against airborne contamination. The cover plates are secured by captive screws.



1046 AH Series • J.I.C. Solenoid*

VALVE CHARACTERISTICS AND ORDERING DATA

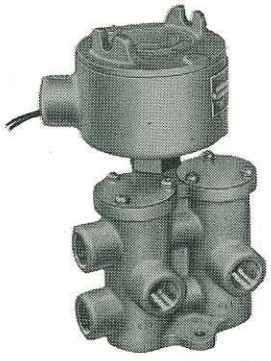
IMPORTANT: When ordering please specify: Size, Ordering Number, Pressure Range, Voltage and Frequency.

Pipe Size (I.P.S.)	Free Air Flow at 100 P.S.I. CuFt/Min.	PRESSURE RANGE (P.S.I.)	ORDERING NUMBER	LIST PRICE	Shipping Weight Pounds
1/4"	44	30-150	J10462AH	49.65	4 1/2
3/8"	99	30-150	J10463AH	55.85	5 1/2
1/2"	221	30-150	J10464AH	64.25	7 3/4
3/4"	417	30-150	J10465AH	89.50	11 1/4

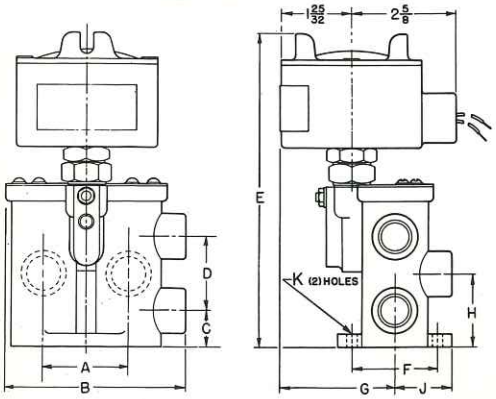
STANDARD VOLTAGES: 24, 115, 230, 460 or 550 Volts, 60 Cycles AC; 115 or 230V, 25C; 115 or 230V, 30C; 115, 230 or 460V, 50C; 6, 12 or 24V DC. For other voltages and frequencies consult Factory, stating lot quantity involved.

DIMENSIONS

VALVE SIZE	A	B	C	D	E	F	G	H	J	K
1/4"	1 9/16	3 13/32	25/32	1 1/4	5 17/32	1 11/16	1 31/32	1 7/16	1 1/16	9/32
3/8"	1 13/16	3 29/32	25/32	1 9/16	5 15/16	1 15/16	2 1/32	1 9/16	1 1/4	9/32
1/2"	2 1/8	4 17/32	15/16	1 27/32	6 13/32	2 1/8	2 3/32	1 27/32	1 7/16	9/32
3/4"	2 3/4	5 21/32	1 1/16	2 13/32	7 11/32	2 9/16	2 9/32	2 1/4	1 3/4	9/32



11403AH



1140 AH Series • Explosion-Proof Solenoid

VALVE CHARACTERISTICS AND ORDERING DATA

IMPORTANT: When ordering please specify: Size, Ordering Number, Pressure Range, Voltage and Frequency.

Pipe Size (I.P.S.)	Free Air Flow at 100 P.S.I. CuFt/Min.	PRESSURE RANGE (P.S.I.)	ORDERING NUMBER	LIST PRICE	Shipping Weight Pounds
1/4"	44	30-150	11402AH	65.65	6 1/2
3/8"	99	30-150	11403AH	71.85	7 1/2
1/2"	221	30-150	11404AH	80.25	9
3/4"	417	30-150	11405AH	104.75	13 1/2

STANDARD VOLTAGES: 24, 115, 230, 460, or 550 Volts, 60 Cycles AC; 115 or 230V, 25C; 115 or 230V, 30C; 115, 230 or 460V, 50C. Class B coils supplied for all DC voltages: For 6, 12 or 24 Volts DC, Add $1.50 List. For other voltages and frequencies consult Factory, stating lot quantity involved.

DIMENSIONS

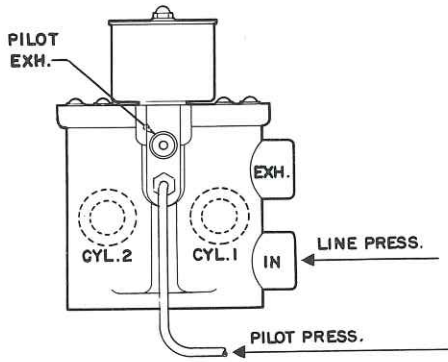
VALVE SIZE	A	B	C	D	E	F	G	H	J	K
1/4"	1 9/16	3 13/32	25/32	1 1/4	7 3/32	1 11/16	2 23/32	1 7/16	1 1/16	9/32
3/8"	1 13/16	3 29/32	25/32	1 9/16	7 1/2	1 15/16	2 25/32	1 9/16	1 1/4	9/32
1/2"	2 1/8	4 17/32	15/16	1 27/32	7 31/32	2 1/8	2 27/32	1 27/32	1 7/16	9/32
3/4"	2 3/4	5 21/32	1 1/16	2 13/32	8 15/16	2 9/16	3 1/32	2 1/4	1 3/4	9/32

4-WAY • SOLENOID-PILOT OPERATED • 0 to 150 P.S.I. • CRESCENT® VALVES

Type AHO

EXTERNAL PILOT SUPPLY

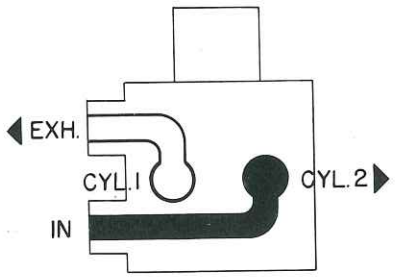
Used principally to control:
1) Gaseous fluids under 30 psi
2) Gaseous fluids to 150 psi which have very low flow.
3) Liquids from 0 to 150 psi



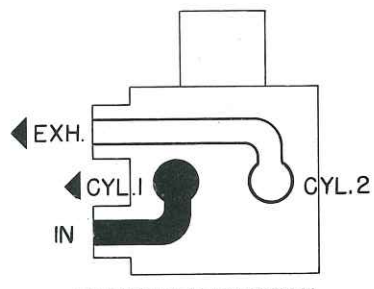
IF MAIN LINE PRESSURE (STATIC) IS LESS THAN 30 P.S.I., EXTERNAL PILOT PRESSURE MUST BE 30 P.S.I.

IF MAIN LINE PRESSURE (STATIC) IS GREATER THAN 30 P.S.I. THE PILOT PRESSURE SHOULD NOT BE LESS THAN MAIN LINE PRESSURE NOR MORE THAN 35 P.S.I. ABOVE MAIN LINE PRESSURE.

FLOW PATTERN OF 4-WAY VALVES

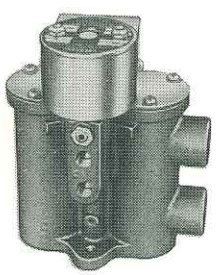


NORMAL POSITION
DE-ENERGIZED



ENERGIZED POSITION

1046 AHO Series • 2 Position Standard Solenoid



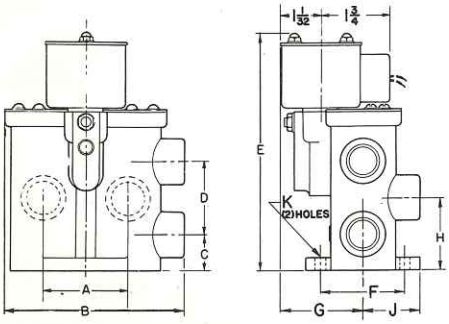
10462AHO

VALVE CHARACTERISTICS AND ORDERING DATA

IMPORTANT: When ordering please specify: Size, Ordering Number, Pressure Range, Voltage and Frequency.

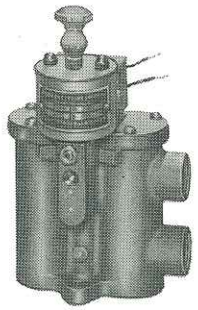
Pipe Size (I.P.S.)	Free Air Flow at 100 P.S.I. CuFt/Min.	PRESSURE RANGE (P.S.I.)	ORDERING NUMBER	LIST PRICE	Shipping Weight Pounds
1/4"	44	0-150	10462AHO	45.15	4 1/2
3/8"	99	0-150	10463AHO	51.35	5 1/2
1/2"	221	0-150	10464AHO	59.75	7
3/4"	417	0-150	10465AHO	85.00	11 1/2

STANDARD VOLTAGES: 24, 115, 230, 460 or 550 Volts, 60 Cycles AC; 115 or 230V, 25C; 115 or 230V, 30C; 115, 230 or 460V, 50C; 6, 12 or 24V DC. For other voltages and frequencies consult Factory, stating lot quantity involved.



DIMENSIONS

VALVE SIZE	A	B	C	D	E	F	G	H	J	K
1/4"	1 9/16	3 13/32	2 5/32	1 1/4	5	1 11/16	1 15/16	1 7/16	1 1/16	9/32
3/8"	1 13/16	3 29/32	2 5/32	1 9/16	5 13/32	1 15/16	2 1/32	1 17/32	1 1/4	9/32
1/2"	2 1/8	4 17/32	1 5/16	1 27/32	5 7/8	2 1/8	2 3/32	1 27/32	1 7/16	9/32
3/4"	2 3/4	5 21/32	1 1/16	2 13/32	6 27/32	2 9/16	2 9/16	2 1/4	1 3/4	9/32



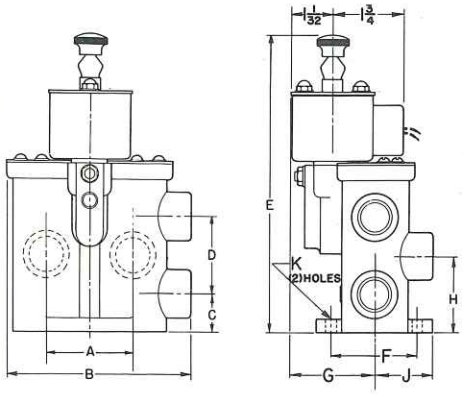
10463AHOMK

1046 AHO Series • MK Manual Override

VALVE CHARACTERISTICS AND ORDERING DATA Specify Locking or Non-Locking

IMPORTANT: When ordering please specify: Size, Ordering Number, Pressure Range, Voltage and Frequency.

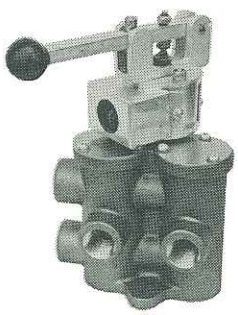
Pipe Size (I.P.S.)	Free Air Flow at 100 P.S.I. CuFt/Min.	PRESSURE RANGE (P.S.I.)	ORDERING NUMBER	LIST PRICE Non-Locking	LIST PRICE Locking	Shipping Weight Pounds
1/4"	44	0-150	10462AHOMK	47.00	47.65	4 1/2
3/8"	99	0-150	10463AHOMK	53.20	53.85	5 1/2
1/2"	221	0-150	10464AHOMK	61.60	62.25	7
3/4"	417	0-150	10465AHOMK	86.85	87.50	11 1/2



STANDARD VOLTAGES: 24, 115, 230, 460 or 550 Volts, 60 Cycles AC; 115 or 230V, 25C; 115 or 230V, 30C; 115, 230 or 460V, 50C; 6, 12 or 24V DC. For other voltages and frequencies consult Factory, stating lot quantity involved.

DIMENSIONS

VALVE SIZE	A	B	C	D	E	F	G	H	J	K
1/4"	1 9/16	3 13/32	25/32	1 1/4	6 13/64	1 11/16	1 15/16	1 7/16	1 1/16	9/32
3/8"	1 13/16	3 29/32	25/32	1 9/16	6 19/32	1 15/16	2 1/32	1 17/64	1 1/4	9/32
1/2"	2 1/8	4 17/32	15/16	1 27/32	7 1/16	2 1/8	2 3/32	1 27/32	1 7/16	9/32
3/4"	2 3/4	5 21/32	1 1/16	2 13/32	8 1/32	2 9/16	2 9/16	2 1/4	1 3/4	9/32



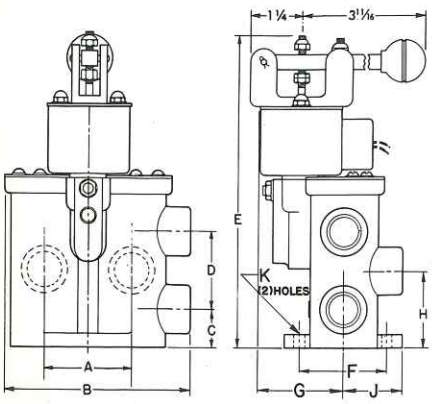
10463AHOL

1046 AHO Series • L Manual Override

VALVE CHARACTERISTICS AND ORDERING DATA

IMPORTANT: When ordering please specify: Size, Ordering Number, Pressure Range, Voltage and Frequency.

Pipe Size (I.P.S.)	Free Air Flow at 100 P.S.I. CuFt/Min.	PRESSURE RANGE (P.S.I.)	ORDERING NUMBER	LIST PRICE	Shipping Weight Pounds
1/4"	44	0-150	10462AHOL	51.40	5 1/4
3/8"	99	0-150	10463AHOL	57.60	6 1/4
1/2"	221	0-150	10464AHOL	66.00	7 3/4
3/4"	417	0-150	10465AHOL	91.25	12 1/4

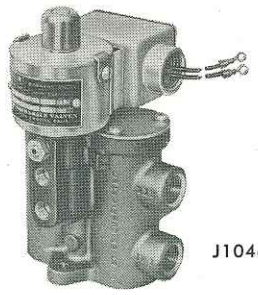


STANDARD VOLTAGES: 24, 115, 230, 460 or 550 Volts, 60 Cycles AC; 115 or 230V, 25C; 115 or 230V, 30C; 115, 230 or 460V, 50C; 6, 12 or 24V DC. For other voltages and frequencies consult Factory, stating lot quantity involved.

DIMENSIONS

VALVE SIZE	A	B	C	D	E	F	G	H	J	K
1/4"	1 9/16	3 13/32	25/32	1 1/4	6 29/64	1 11/16	1 15/16	1 7/16	1 1/16	9/32
3/8"	1 13/16	3 29/32	25/32	1 9/16	6 27/32	1 15/16	2 1/32	1 17/32	1 1/4	9/32
1/2"	2 1/8	4 17/32	15/16	1 27/32	7 21/64	2 1/8	2 3/32	1 27/32	1 7/16	9/32
3/4"	2 3/4	5 21/32	1 1/16	2 13/32	8 9/32	2 9/16	2 9/16	2 1/4	1 3/4	9/32

TYPE AHO



J10462AHO

J1046 AHO Series • J.I.C. Solenoid*

VALVE CHARACTERISTICS AND ORDERING DATA

IMPORTANT: When ordering please specify: Size, Ordering Number, Pressure Range, Voltage and Frequency.

Pipe Size (I.P.S.)	Free Air Flow at 100 P.S.I. CuFt/Min.	PRESSURE RANGE (P.S.I.)	ORDERING NUMBER	LIST PRICE	Shipping Weight Pounds
1/4"	44	0-150	J10462AHO	49.65	4 1/2
3/8"	99	0-150	J10463AHO	55.85	5 1/2
1/2"	221	0-150	J10464AHO	64.25	7 3/4
3/4"	417	0-150	J10465AHO	89.50	11 1/4

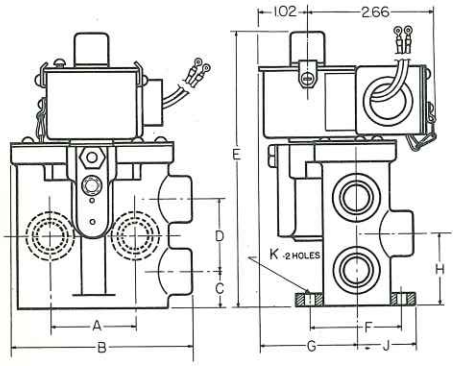
*SOLENOIDS DESIGNED TO J.I.C. SPECIFICATIONS.

The solenoid is inoperative when the cover is removed and there is a manual override which is safe against accidental actuation. The conduit connector is threaded and the pressure ring terminals are on 6" free leads. Captive cover plates protect the solenoid and junction box to seal them against airborne contamination. The cover plates are secured by captive screws.

STANDARD VOLTAGES: 24, 115, 230, 460 or 550 Volts, 60 Cycles AC; 115 or 230V, 25C; 115 or 230V, 30C; 115, 230 or 460V, 50C; 6, 12 or 24V DC. For other voltages and frequencies consult Factory, stating lot quantity involved.

DIMENSIONS

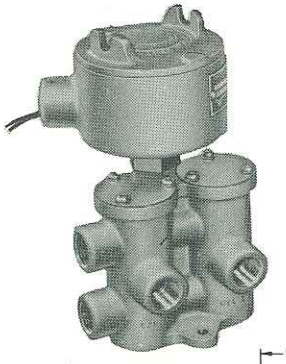
VALVE SIZE	A	B	C	D	E	F	G	H	J	K
1/4"	1 9/16	3 13/32	25/32	1 1/4	5 17/32	1 11/16	1 15/16	1 7/16	1 1/16	9/32
3/8"	1 13/16	3 29/32	25/32	1 9/16	5 15/16	1 15/16	2 1/32	1 17/32	1 1/4	9/32
1/2"	2 1/8	4 17/32	15/16	1 27/32	6 13/32	2 1/8	2 3/32	1 27/32	1 7/16	9/32
3/4"	2 3/4	5 21/32	1 1/16	2 13/32	7 3/8	2 9/16	2 9/16	2 1/4	1 3/4	9/32



1140 AHO Series • Explosion-Proof Solenoid

VALVE CHARACTERISTICS AND ORDERING DATA

IMPORTANT: When ordering please specify: Size, Ordering Number, Pressure Range, Voltage and Frequency.



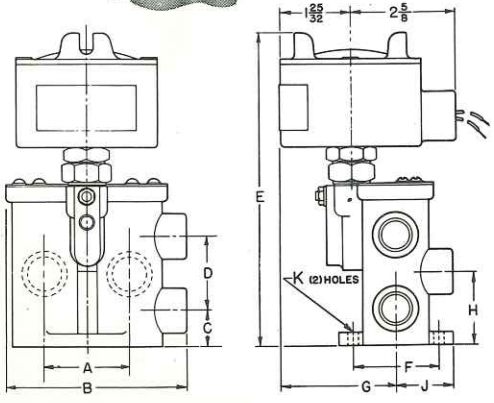
11403AHO

Pipe Size (I.P.S.)	Free Air Flow at 100 P.S.I. CuFt/Min.	PRESSURE RANGE (P.S.I.)	ORDERING NUMBER	LIST PRICE	Shipping Weight Pounds
1/4"	44	0-150	11402AHO	65.65	6 1/2
3/8"	99	0-150	11403AHO	71.85	7 1/2
1/2"	221	0-150	11404AHO	80.25	9
3/4"	417	0-150	11405AHO	104.75	13 1/2

STANDARD VOLTAGES: 24, 115, 230, 460 or 550 Volts, 60 Cycles AC; 115 or 230V, 25C; 115 or 230V, 30C; 115, 230 or 460V, 50C. Class B coils supplied for all DC voltages: For 6, 12 or 24 Volts DC, Add $1.50 List. For other voltages and frequencies consult Factory, stating lot quantity involved.

DIMENSIONS

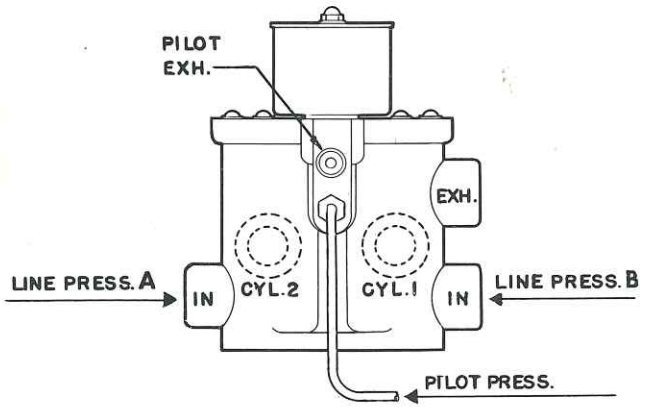
VALVE SIZE	A	B	C	D	E	F	G	H	J	K
1/4"	1 9/16	3 13/32	25/32	1 1/4	6 29/32	1 11/16	2 23/32	1 7/16	1 1/16	9/32
3/8"	1 13/16	3 29/32	25/32	1 9/16	7 5/16	1 15/16	2 25/32	1 17/32	1 1/4	9/32
1/2"	2 1/8	4 17/32	15/16	1 27/32	7 25/32	2 1/8	2 27/32	1 27/32	1 7/16	9/32
3/4"	2 3/4	5 21/32	1 1/16	2 13/32	8 3/4	2 9/16	3 1/32	2 1/4	1 3/4	9/32



4-WAY • SOLENOID-PILOT • 0 to 150 P.S.I. • CRESCENT® VALVES
DUAL PRESSURE

Type AHON2

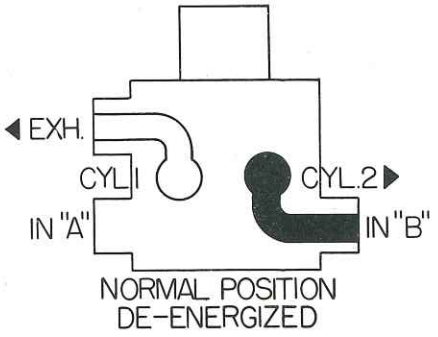
EXTERNAL PILOT SUPPLY

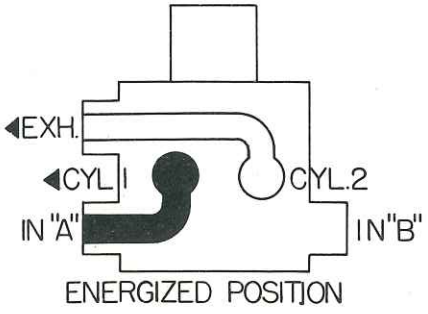


IF BOTH MAIN LINE PRESSURES (STATIC) "A" AND "B" ARE BELOW 30 P.S.I. THE EXTERNAL PILOT PRESSURE MUST BE 30 P.S.I.

IF AT LEAST ONE OF THE MAIN LINE PRESSURES (STATIC) IS GREATER THAN 30 P.S.I. THE PILOT PRESSURE SHOULD NOT BE LESS THAN THE HIGHER LINE PRESSURE, NOR MORE THAN 35 P.S.I. ABOVE THE HIGHER PRESSURE.

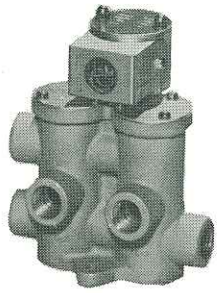
FLOW PATTERN OF DUAL PRESSURE VALVES





1046 AHON2 Series • 2 Position Standard Solenoid

VALVE CHARACTERISTICS AND ORDERING DATA

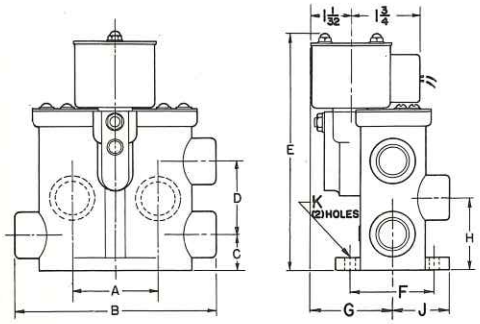


10463AHON2

IMPORTANT: When ordering please specify: Size, Ordering Number, Pressure Range, Voltage and Frequency.

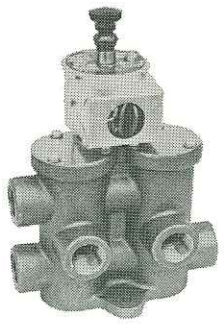
Pipe Size (I.P.S.)	Free Air Flow at 100 P.S.I. CuFt/Min.	PRESSURE RANGE (P.S.I.)	ORDERING NUMBER	LIST PRICE	Shipping Weight Pounds
¼"	44	0-150	10462AHON2	46.75	4¾
⅜"	99	0-150	10463AHON2	53.15	5¾
½"	221	0-150	10464AHON2	61.75	7¼
¾"	417	0-150	10465AHON2	87.20	12

STANDARD VOLTAGES: 24, 115, 230, 460 or 550 Volts, 60 Cycles AC; 115 or 230V, 25C; 115 or 230V, 30C; 115, 230 or 460V, 50C; 6, 12 or 24V DC. For other voltages and frequencies consult Factory, stating lot quantity involved.



DIMENSIONS

VALVE SIZE	A	B	C	D	E	F	G	H	J	K
¼"	1 9/16	3 11/16	25/32	1 1/4	5	1 11/16	1 15/16	1 7/16	1 1/16	9/32
⅜"	1 13/16	4 1/4	25/32	1 9/16	5 13/32	1 15/16	2 1/32	1 17/32	1 1/4	9/32
½"	2 1/8	5	15/16	1 27/32	5 7/8	2 1/8	2 3/32	1 27/32	1 7/16	9/32
¾"	2 3/4	6 1/4	1 1/16	2 13/32	6 27/32	2 9/16	2 9/16	2 1/4	1 3/4	9/32



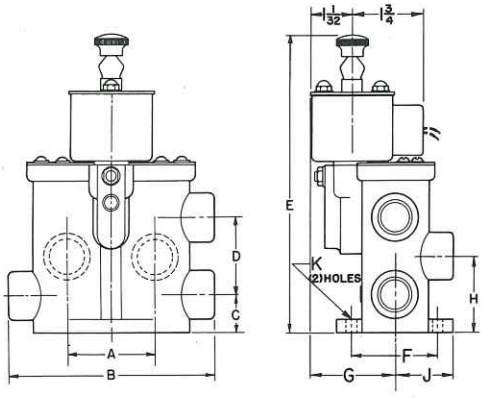
10463AHON2MK

1046 AHON2 Series • MK Manual Override

VALVE CHARACTERISTICS AND ORDERING DATA Specify Locking or Non-Locking

IMPORTANT: When ordering please specify: Size, Ordering Number, Pressure Range, Voltage and Frequency.

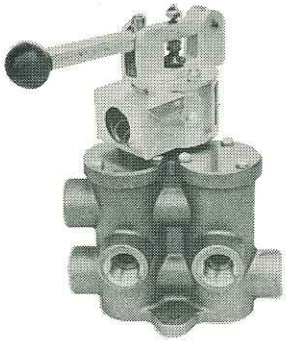
Pipe Size (I.P.S.)	Free Air Flow at 100 P.S.I. CuFt/Min.	PRESSURE RANGE (P.S.I.)	ORDERING NUMBER	LIST PRICE		Shipping Weight Pounds
				Non-Locking	Locking	
1/4"	44	0-150	10462AHON2MK	48.60	49.25	4 3/4
3/8"	99	0-150	10463AHON2MK	55.00	55.65	5 3/4
1/2"	221	0-150	10464AHON2MK	63.60	64.25	7 1/4
3/4"	417	0-150	10465AHON2MK	89.05	89.70	12



STANDARD VOLTAGES: 24, 115, 230, 460 or 550 Volts, 60 Cycles AC; 115 or 230V, 25C; 115 or 230V, 30C; 115, 230 or 460V, 50C; 6, 12 or 24V DC. For other voltages and frequencies consult Factory, stating lot quantity involved.

DIMENSIONS

VALVE SIZE	A	B	C	D	E	F	G	H	J	K
1/4"	1 9/16	3 11/16	25/32	1 1/4	6 13/64	1 11/16	1 15/16	1 7/16	1 1/16	9/32
3/8"	1 13/16	4 1/4	25/32	1 9/16	6 19/32	1 15/16	2 1/32	1 17/32	1 1/4	9/32
1/2"	2 1/8	5	15/16	1 27/32	7 1/16	2 1/8	2 3/32	1 27/32	1 7/16	9/32
3/4"	2 3/4	6 1/4	1 1/16	2 13/32	8 1/32	2 9/16	2 9/16	2 1/4	1 3/4	9/32



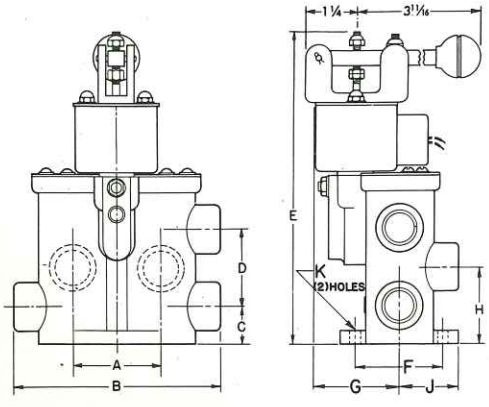
10463AHON2L

1046 AHON2 Series • L Manual Override

VALVE CHARACTERISTICS AND ORDERING DATA

IMPORTANT: When ordering please specify: Size, Ordering Number, Pressure Range, Voltage and Frequency.

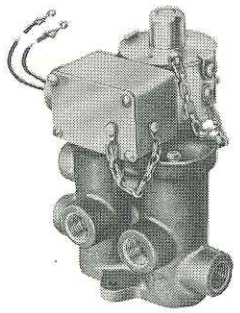
Pipe Size (I.P.S.)	Free Air Flow at 100 P.S.I. CuFt/Min.	PRESSURE RANGE (P.S.I.)	ORDERING NUMBER	LIST PRICE	Shipping Weight Pounds
1/4"	44	0-150	10462AHON2L	53.00	5 1/2
3/8"	99	0-150	10463AHON2L	59.40	6 1/2
1/2"	221	0-150	10464AHON2L	68.00	8
3/4"	417	0-150	10465AHON2L	93.45	12 3/4



STANDARD VOLTAGES: 24, 115, 230, 460 or 550 Volts, 60 Cycles AC; 115 or 230V, 25C; 115 or 230V, 30C; 115, 230 or 460V, 50C; 6, 12 or 24V DC. For other voltages and frequencies consult Factory, stating lot quantity involved.

DIMENSIONS

VALVE SIZE	A	B	C	D	E	F	G	H	J	K
1/4"	1 9/16	3 11/16	25/32	1 1/4	6 29/64	1 11/16	1 15/16	1 7/16	1 1/16	9/32
3/8"	1 13/16	4 1/4	25/32	1 9/16	6 27/32	1 15/16	2 1/32	1 17/32	1 1/4	9/32
1/2"	2 1/8	5	15/16	1 27/32	7 21/64	2 1/8	2 3/32	1 27/32	1 7/16	9/32
3/4"	2 3/4	6 1/4	1 1/16	2 13/32	8 9/32	2 9/16	2 9/16	2 1/4	1 3/4	9/32



J10463AHON2

J 1046 AHON2 Series • J.I.C. Solenoid*

VALVE CHARACTERISTICS AND ORDERING DATA

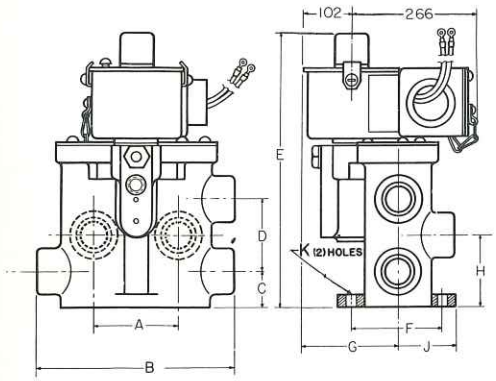
IMPORTANT: When ordering please specify: Size, Ordering Number, Pressure Range, Voltage and Frequency.

Pipe Size (I.P.S.)	Free Air Flow at 100 P.S.I. CuFt/Min.	PRESSURE RANGE (P.S.I.)	ORDERING NUMBER	LIST PRICE	Shipping Weight Pounds
1/4"	44	0-150	J10462AHON2	51.25	4 1/2
3/8"	99	0-150	J10463AHON2	57.65	5 1/2
1/2"	221	0-150	J10464AHON2	66.25	7 3/4
3/4"	417	0-150	J10465AHON2	91.70	11 1/4

*SOLENOIDS DESIGNED TO J.I.C. SPECIFICATIONS.

The solenoid is inoperative when the cover is removed and there is a manual override which is safe against accidental actuation. The conduit connector is threaded and the pressure ring terminals are on 6" free leads. Captive cover plates protect the solenoid and junction box to seal them against airborne contamination. The cover plates are secured by captive screws.

STANDARD VOLTAGES: 24, 115, 230, 460 or 550 Volts, 60 Cycles AC; 115 or 230V, 25C; 115 or 230V, 30C; 115, 230 or 460V, 50C; 6, 12 or 24V DC. For other voltages and frequencies consult Factory, stating lot quantity involved.



DIMENSIONS

VALVE SIZE	A	B	C	D	E	F	G	H	J	K
1/4"	1 9/16	3 11/16	25/32	1 1/4	5 17/32	1 11/16	1 15/16	1 7/16	1 1/16	9/32
3/8"	1 13/16	4 1/4	25/32	1 9/16	5 15/16	1 15/16	2 1/32	1 17/32	1 1/4	9/32
1/2"	2 1/8	5	15/16	1 27/32	6 13/32	2 1/8	2 3/32	1 27/32	1 7/16	9/32
3/4"	2 3/4	6 1/4	1 1/16	2 13/32	7 11/32	2 9/16	2 9/16	2 1/4	1 3/4	9/32

11403AHON2

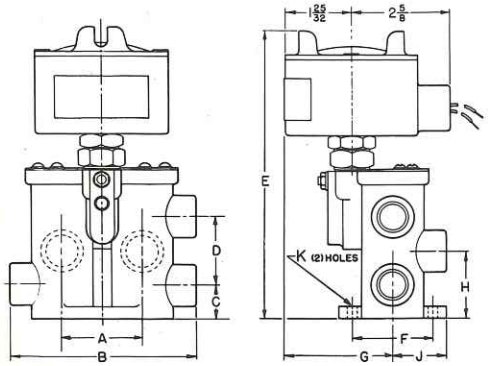
1140 AHON2 Series • Explosion-Proof Solenoid

VALVE CHARACTERISTICS AND ORDERING DATA

IMPORTANT: When ordering please specify: Size, Ordering Number, Pressure Range, Voltage and Frequency.

Pipe Size (I.P.S.)	Free Air Flow at 100 P.S.I. CuFt/Min.	PRESSURE RANGE (P.S.I.)	ORDERING NUMBER	LIST PRICE	Shipping Weight Pounds
1/4"	44	0-150	11402AHON2	67.25	6 3/4
3/8"	99	0-150	11403AHON2	73.65	7 3/4
1/2"	221	0-150	11404AHON2	82.25	9 1/4
3/4"	417	0-150	11405AHON2	106.95	14

STANDARD VOLTAGES: 24, 115, 230, 460 or 550 Volts, 60 Cycles AC; 115 or 230V, 25C; 115 or 230V, 30C; 115, 230 or 460V, 50C. Class B coils supplied for all DC voltages: For 6, 12 or 24 Volts DC, Add $1.50 List. For other voltages and frequencies consult Factory, stating lot quantity involved.



DIMENSIONS

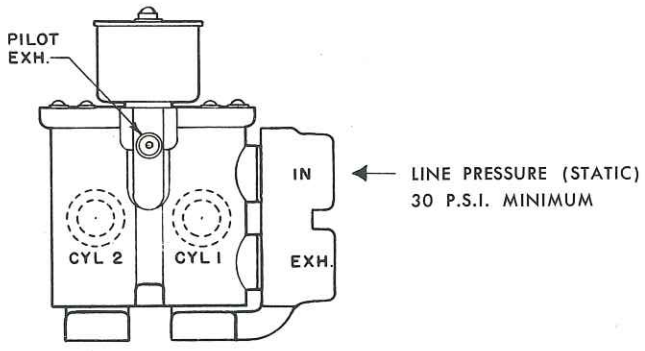
VALVE SIZE	A	B	C	D	E	F	G	H	J	K
1/4"	1 9/16	3 11/16	25/32	1 1/4	6 29/32	1 11/16	2 23/32	1 7/16	1 1/16	9/32
3/8"	1 13/16	4 1/4	25/32	1 9/16	7 5/16	1 15/16	2 25/32	1 17/32	1 1/4	9/32
1/2"	2 1/8	5	15/16	1 27/32	7 25/32	2 1/8	2 27/32	1 27/32	1 7/16	9/32
3/4"	2 3/4	6 1/4	1 1/16	2 13/32	8 3/4	2 9/16	3 1/32	2 1/4	1 3/4	9/32

4-WAY • SOLENOID-PILOT • 30 to 150 P.S.I. • CRESCENT® SUB-BASE* VALVES

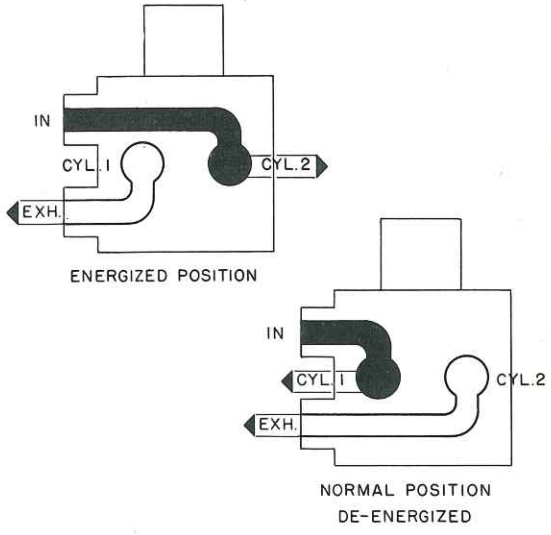
*These valves are mounted on a permanently installed sub-base. The valve can be quickly removed from the sub-base simply by loosening three body clamps, eliminating pipe fitting and the need for quick hose couplings.

Type AH

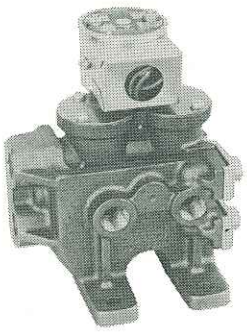
INTEGRAL PILOT



FLOW PATTERN OF 4-WAY SUB-BASE VALVES



1047 AH Series • Sub-Base • Standard Solenoid



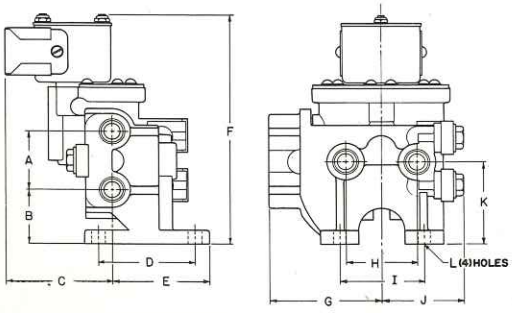
10472AH

VALVE CHARACTERISTICS AND ORDERING DATA

IMPORTANT: When ordering please specify: Size, Ordering Number, Pressure Range, Voltage and Frequency.

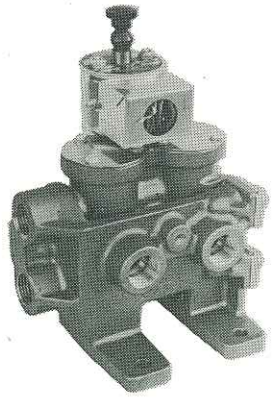
Pipe Size (I.P.S.)	Free Air Flow at 100 P.S.I. CuFt/Min.	PRESSURE RANGE (P.S.I.)	ORDERING NUMBER	LIST PRICE	Shipping Weight Pounds
1/4"	44	30-150	10472AH	55.50	7
3/8"	99	30-150	10473AH	61.40	9
1/2"	221	30-150	10474AH	74.00	10 3/4
3/4"	417	30-150	10475AH	105.00	13

STANDARD VOLTAGES: 24, 115, 230, 460 or 550 Volts, 60 Cycles AC; 115 or 230V, 25C; 115 or 230V, 30C; 115, 230 or 460V, 50C; 6, 12 or 24V DC. For other voltages and frequencies consult Factory, stating lot quantity involved.



DIMENSIONS

VALVE SIZE	A	B	C	D	E	F	G	H	I	J	K	L
1/4"	1 1/4	1 31/64	1 31/32	2 1/4	2 13/32	5 3/4	2 19/32	1 9/16	2 1/64	1 29/32	2 7/64	9/32
3/8"	1 9/16	1 1/2	2 1/32	2 1/2	2 17/32	6 1/8	2 29/32	1 13/16	2 3/16	2 1/8	2 15/64	11/32
1/2"	1 53/64	1 41/64	2 3/32	2 7/8	2 25/32	6 5/8	3 1/32	2 1/8	2 5/8	2 13/32	2 9/16	11/32
3/4"	2 3/8	1 13/16	2 9/32	2 7/8	3	7 5/8	3 9/16	2 3/4	3 5/8	2 7/8	3	11/32



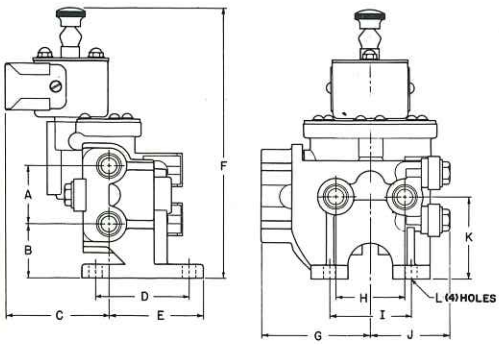
10473AHMK

1047 AH Series • Sub-Base • MK Manual Override

VALVE CHARACTERISTICS AND ORDERING DATA Specify Locking or Non-Locking

IMPORTANT: When ordering please specify: Size, Ordering Number, Pressure Range, Voltage and Frequency.

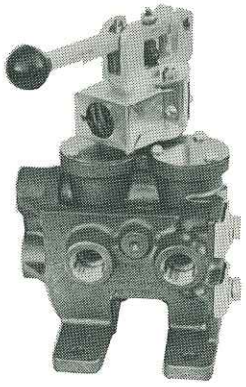
Pipe Size (I.P.S.)	Free Air Flow at 100 P.S.I. CuFt/Min.	PRESSURE RANGE (P.S.I.)	ORDERING NUMBER	LIST PRICE		Shipping Weight Pounds
				Non-Locking	Locking	
1/4"	44	30-150	10472AHMK	57.35	58.00	7
3/8"	99	30-150	10473AHMK	63.25	63.90	9
1/2"	221	30-150	10474AHMK	75.85	76.50	10 3/4
3/4"	417	30-150	10475AHMK	106.85	107.50	13



STANDARD VOLTAGES: 24, 115, 230, 460 or 550 Volts, 60 Cycles AC; 115 or 230V, 25C; 115 or 230V, 30C; 115, 230 or 460V, 50C; 6, 12 or 24V DC. For other voltages and frequencies consult Factory, stating lot quantity involved.

DIMENSIONS

VALVE SIZE	A	B	C	D	E	F	G	H	I	J	K	L
1/4"	1 1/4	1 31/64	1 31/32	2 1/4	2 13/32	6 57/64	2 19/32	1 9/16	2 1/64	1 29/32	2 7/64	9/32
3/8"	1 9/16	1 1/2	2 1/32	2 1/2	2 17/32	7 9/32	2 29/32	1 13/16	2 3/16	2 1/8	2 15/64	11/32
1/2"	1 53/64	1 41/64	2 3/32	2 7/8	2 25/32	7 51/64	3 1/32	2 1/8	2 5/8	2 13/32	2 9/16	11/32
3/4"	2 3/8	1 13/16	2 9/32	2 7/8	3	8 25/32	3 9/16	2 3/4	3 5/8	2 7/8	3	11/32



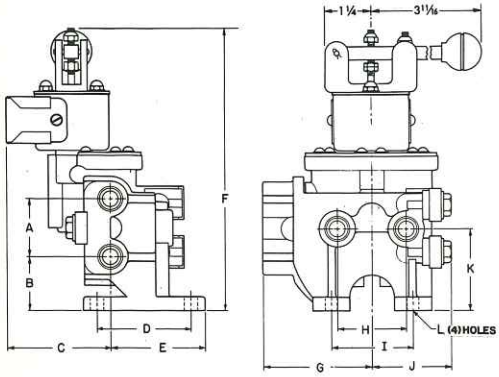
10473AHL

1047 AH Series • Sub-Base • L Manual Override

VALVE CHARACTERISTICS AND ORDERING DATA

IMPORTANT: When ordering please specify: Size, Ordering Number, Pressure Range, Voltage and Frequency.

Pipe Size (I.P.S.)	Free Air Flow at 100 P.S.I. CuFt/Min.	PRESSURE RANGE (P.S.I.)	ORDERING NUMBER	LIST PRICE	Shipping Weight Pounds
1/4"	44	30-150	10472AHL	61.75	7 3/4
3/8"	99	30-150	10473AHL	67.65	9 3/4
1/2"	221	30-150	10474AHL	80.25	11 1/2
3/4"	417	30-150	10475AHL	111.25	13 3/4

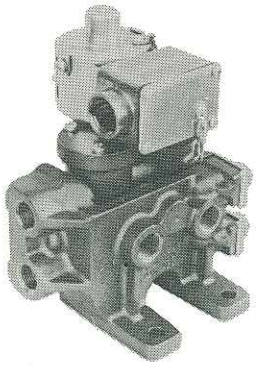


STANDARD VOLTAGES: 24, 115, 230, 460 or 550 Volts, 60 Cycles AC; 115 or 230V, 25C; 115 or 230V, 30C; 115, 230 or 460V, 50C; 6, 12 or 24V DC. For other voltages and frequencies consult Factory, stating lot quantity involved.

DIMENSIONS

VALVE SIZE	A	B	C	D	E	F	G	H	I	J	K	L
1/4"	1 1/4	1 31/64	1 31/32	2 1/4	2 13/32	7 9/64	2 19/32	1 9/16	2 1/64	1 29/32	2 7/64	9/32
3/8"	1 9/16	1 1/2	2 1/32	2 1/2	2 17/32	7 9/16	2 29/32	1 13/16	2 3/16	2 1/8	2 15/64	11/32
1/2"	1 53/64	1 41/64	2 3/32	2 7/8	2 25/32	8 3/64	3 1/32	2 1/8	2 5/8	2 13/32	2 9/16	11/32
3/4"	2 3/8	1 13/16	2 9/32	2 7/8	3	9 1/32	3 9/16	2 3/4	3 5/8	2 7/8	3	11/32

TYPE AH



J10473AH

1047 Series • Sub-Base • J.I.C. Solenoid*

VALVE CHARACTERISTICS AND ORDERING DATA

IMPORTANT: When ordering please specify: Size, Ordering Number, Pressure Range, Voltage and Frequency.

Pipe Size (I.P.S.)	Free Air Flow at 100 P.S.I. CuFt/Min.	PRESSURE RANGE (P.S.I.)	ORDERING NUMBER	LIST PRICE	Shipping Weight Pounds
1/4"	44	30-150	J10472AH	60.00	7
3/8"	99	30-150	J10473AH	65.90	9
1/2"	221	30-150	J10474AH	78.50	11
3/4"	417	30-150	J10475AH	109.50	13

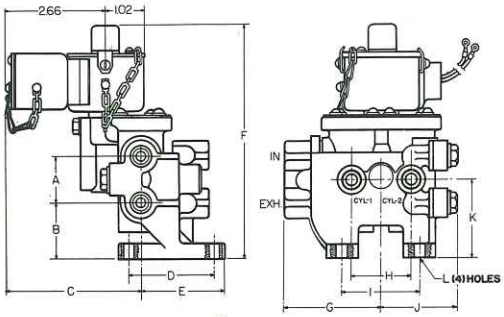
*SOLENOIDS DESIGNED TO J.I.C. SPECIFICATIONS.

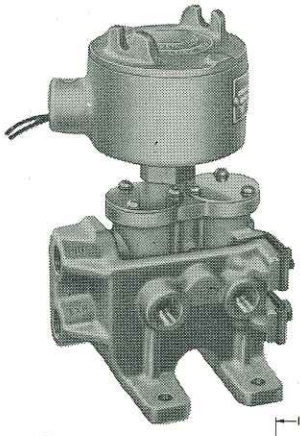
The solenoid is inoperative when the cover is removed and there is a manual override which is safe against accidental actuation. The conduit connector is threaded and the pressure ring terminals are on 6" free leads. Captive cover plates protect the solenoid and junction box to seal them against airborne contamination. The cover plates are secured by captive screws.

STANDARD VOLTAGES: 24, 115, 230, 460 or 550 Volts, 60 Cycles AC; 115 or 230V, 25C; 115 or 230V, 30C; 115, 230 or 460V, 50C; 6, 12 or 24V DC. For other voltages and frequencies consult Factory, stating lot quantity involved.

DIMENSIONS

VALVE SIZE	A	B	C	D	E	F	G	H	I	J	K	L
1/4"	1 1/4	1 31/64	3 19/32	2 1/4	2 9/32	6 7/32	2 19/32	1 9/16	2 1/64	1 29/32	2 7/64	9/32
3/8"	1 9/16	1 29/64	3 11/16	2 1/2	2 17/32	6 5/8	2 29/32	1 13/16	2 3/16	2 1/8	2 15/64	11/32
1/2"	1 53/64	1 41/64	3 23/32	2 7/8	2 25/32	7 1/8	3 1/32	2 1/8	2 5/8	2 11/32	2 9/16	11/32
3/4"	2 3/8	1 13/16	4	2 7/8	3	8 1/8	3 9/16	2 3/4	3 5/8	2 7/8	3	11/32





11413AH

1141 AH Series • Sub-Base • Explosion-Proof Solenoid

VALVE CHARACTERISTICS AND ORDERING DATA

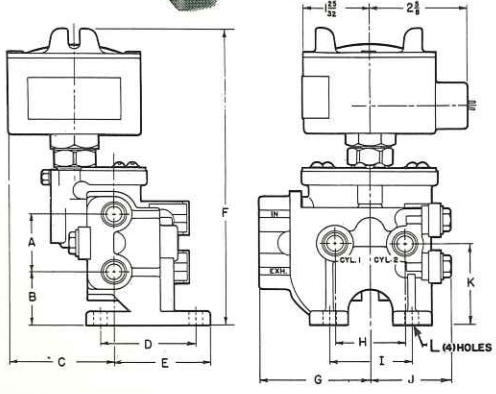
IMPORTANT: When ordering please specify: Size, Ordering Number, Pressure Range, Voltage and Frequency.

Pipe Size (I.P.S.)	Free Air Flow at 100 P.S.I. CuFt/Min.	PRESSURE RANGE (P.S.I.)	ORDERING NUMBER	LIST PRICE	Shipping Weight Pounds
1/4"	44	30-150	11412AH	76.00	9
3/8"	99	30-150	11413AH	81.90	11
1/2"	221	30-150	11414AH	94.50	12 1/2
3/4"	417	30-150	11415AH	125.50	15

STANDARD VOLTAGES: 24, 115, 230, 460 ar 550 Volts, 60 Cycles AC; 115 or 230V, 25C; 115 or 230V, 30C; 115, 230 or 460V, 50C. Class B coils supplied for all DC voltages: For 6, 12 or 24 Volts DC, Add $1.50 List. For other voltages and frequencies consult Factory, stating lot quantity involved.

DIMENSIONS

VALVE SIZE	A	B	C	D	E	F	G	H	I	J	K	L
1/4"	1 1/4	1 31/64	2 23/32	2 1/4	2 9/32	7 19/32	2 19/32	1 9/16	2 1/64	1 29/32	2 7/64	9/32
3/8"	1 9/16	1 1/2	2 25/32	2 1/2	2 17/32	8"	2 29/32	1 13/16	2 3/16	2 1/8	2 15/64	11/32
1/2"	1 53/64	1 41/64	2 27/32	2 7/8	2 25/32	8 1/2	3 1/32	2 1/8	2 5/8	2 13/32	2 9/16	11/32
3/4"	2 3/8	1 13/16	3 1/32	2 7/8	3"	9 1/2	3 9/16	2 3/4	3 5/8	2 7/8	3"	11/32



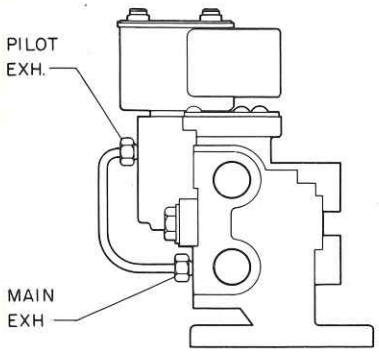
4-WAY • SOLENOID-PILOT • 0 to 150 P.S.I. • CRESCENT® SUB-BASE* VALVES

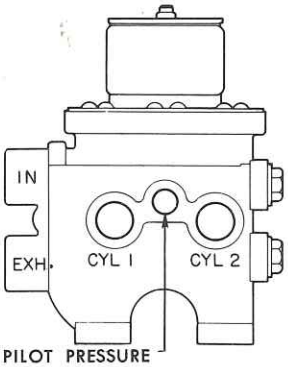
*These valves are mounted on a permanently installed sub-base. The valve can be quickly removed from the sub-base simply by loosening three body clamps, eliminating pipe fitting and the need for quick hose couplings.

Type AHO

EXTERNAL PILOT SUPPLY

Used principally to control:
1) Gaseous fluids under 30 psi
2) Gaseous fluids to 150 psi which have very low flow.
3) Liquids from 0 to 150 psi



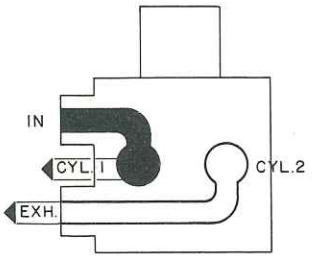


PILOT PRESSURE

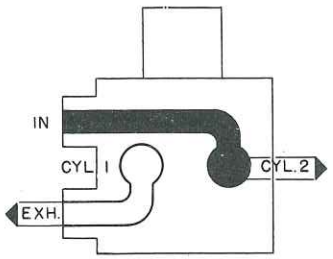
IF MAIN LINE PRESSURE (STATIC) IS LESS THAN 30 P.S.I., EXTERNAL PILOT PRESSURE MUST BE 30 P.S.I.

IF MAIN LINE PRESSURE (STATIC) IS GREATER THAN 30 P.S.I. THE PILOT PRESSURE SHOULD NOT BE LESS THAN MAIN LINE PRESSURE NOR MORE THAN 35 P.S.I. ABOVE MAIN LINE PRESSURE.

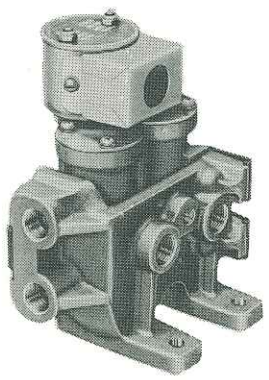
FLOW PATTERN OF 4-WAY SUB-BASE VALVES



NORMAL POSITION
DE-ENERGIZED



ENERGIZED POSITION



10473AHO

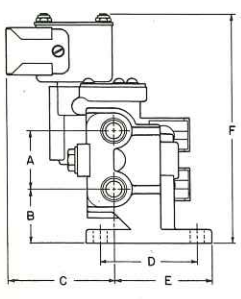
1047 AHO Series • Sub-Base • Standard Solenoid

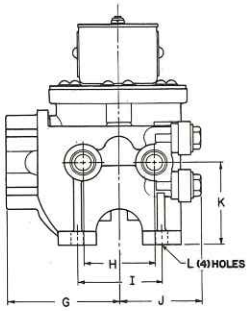
VALVE CHARACTERISTICS AND ORDERING DATA

IMPORTANT: When ordering please specify: Size, Ordering Number, Pressure Range, Voltage and Frequency.

Pipe Size (I.P.S.)	Free Air Flow at 100 P.S.I. CuFt/Min.	PRESSURE RANGE (P.S.I.)	ORDERING NUMBER	LIST PRICE	Shipping Weight Pounds
1/4"	44	0-150	10472AHO	55.50	7
3/8"	99	0-150	10473AHO	61.40	9
1/2"	221	0-150	10474AHO	74.00	10 3/4
3/4"	417	0-150	10475AHO	105.00	13

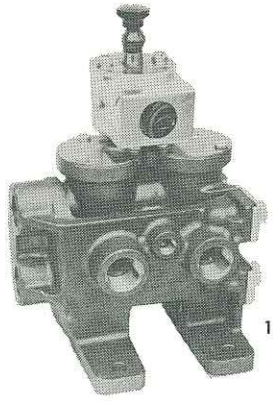
STANDARD VOLTAGES: 24, 115, 230, 460 or 550 Volts, 60 Cycles AC; 115 or 230V, 25C; 115 or 230V, 30C; 115, 230 or 460V, 50C; 6, 12 or 24V DC. For other voltages and frequencies consult Factory, stating lot quantity involved.





DIMENSIONS

VALVE SIZE	A	B	C	D	E	F	G	H	I	J	K	L
1/4"	1 1/4	1 31/64	1 31/32	2 1/4	2 13/32	5 3/4	2 19/32	1 9/16	2 1/64	1 29/32	2 7/64	9/32
3/8"	1 9/16	1 1/2	2 1/32	2 1/2	2 17/32	6 1/8	2 29/32	1 13/16	2 3/16	2 1/8	2 15/64	11/32
1/2"	1 53/64	1 41/64	2 3/32	2 7/8	2 25/32	6 5/8	3 1/32	2 1/8	2 5/8	2 13/32	2 9/16	11/32
3/4"	2 3/8	1 13/16	2 9/32	2 7/8	3	7 5/8	3 9/16	2 3/4	3 5/8	2 7/8	3	11/32



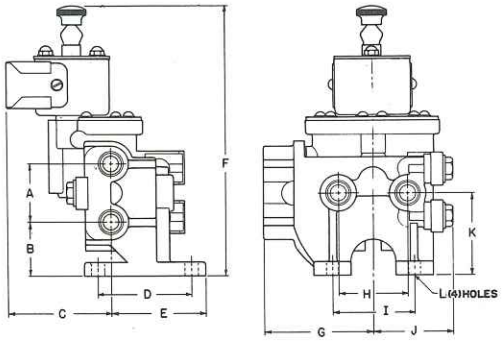
10473AHOMK

1047 AHO • Sub-Base • MK Manual Override

VALVE CHARACTERISTICS AND ORDERING DATA Specify Locking or Non-Locking

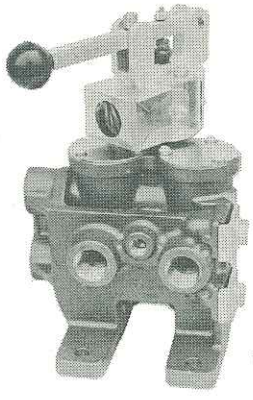
IMPORTANT: When ordering please specify: Size, Ordering Number, Pressure Range, Voltage and Frequency.

Pipe Size (I.P.S.)	Free Air Flow at 100 P.S.I. CuFt/Min.	PRESSURE RANGE (P.S.I.)	ORDERING NUMBER	LIST PRICE		Shipping Weight Pounds
				Non-Locking	Locking	
1/4"	44	0-150	10472AHOMK	57.35	58.00	7
3/8"	99	0-150	10473AHOMK	63.25	63.90	9
1/2"	221	0-150	10474AHOMK	75.85	76.50	10 3/4
3/4"	417	0-150	10475AHOMK	106.85	107.50	13



DIMENSIONS

VALVE SIZE	A	B	C	D	E	F	G	H	I	J	K	L
1/4"	1 1/4	1 31/64	1 31/32	2 1/4	2 13/32	6 57/64	2 19/32	1 9/16	2 1/64	1 29/32	2 7/64	9/32
3/8"	1 9/16	1 1/2	2 1/32	2 1/2	2 17/32	7 9/32	2 29/32	1 13/16	2 3/16	2 1/8	2 15/64	11/32
1/2"	1 53/64	1 41/64	2 3/32	2 7/8	2 25/32	7 51/64	3 1/32	2 1/8	2 5/8	2 13/32	2 9/16	11/32
3/4"	2 3/8	1 13/16	2 9/32	2 7/8	3	8 25/32	3 9/16	2 3/4	3 5/8	2 7/8	3	11/32



10473AHOL

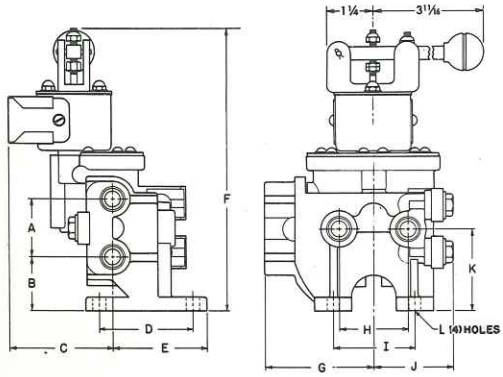
1047 AHO Series • Sub-Base • L Manual Override

VALVE CHARACTERISTICS AND ORDERING DATA

IMPORTANT: When ordering please specify: Size, Ordering Number, Pressure Range, Voltage and Frequency.

Pipe Size (I.P.S.)	Free Air Flow at 100 P.S.I. CuFt/Min.	PRESSURE RANGE (P.S.I.)	ORDERING NUMBER	LIST PRICE	Shipping Weight Pounds
1/4"	44	0-150	10472AHOL	61.75	7 3/4
3/8"	99	0-150	10473AHOL	67.65	9 3/4
1/2"	221	0-150	10474AHOL	80.25	11 1/2
3/4"	417	0-150	10475AHOL	111.25	13 3/4

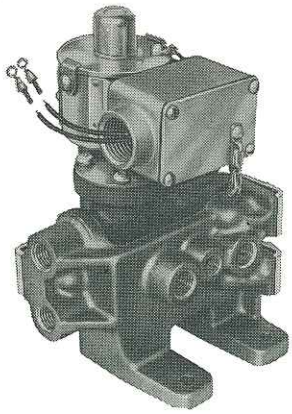
STANDARD VOLTAGES: 24, 115, 230, 460 or 550 Volts, 60 Cycles AC; 115 or 230V, 25C; 115 or 230V, 30C; 115, 230 or 460V, 50C; 6, 12 or 24V DC. For other voltages and frequencies consult Factory, stating lot quantity involved.



DIMENSIONS

VALVE SIZE	A	B	C	D	E	F	G	H	I	J	K	L
1/4"	1 1/4	1 31/64	1 31/32	2 1/4	2 13/32	7 9/64	2 19/32	1 9/16	2 1/64	1 29/32	2 7/64	9/32
3/8"	1 9/16	1 1/2	2 1/32	2 1/2	2 17/32	7 9/16	2 29/32	1 13/16	2 3/16	2 1/8	2 15/64	11/32
1/2"	1 53/64	1 41/64	2 3/32	2 7/8	2 25/32	8 3/64	3 1/32	2 1/8	2 5/8	2 13/32	2 9/16	11/32
3/4"	2 3/8	1 13/16	2 9/32	2 7/8	3	9 1/32	3 9/16	2 3/4	3 5/8	2 7/8	3	11/32

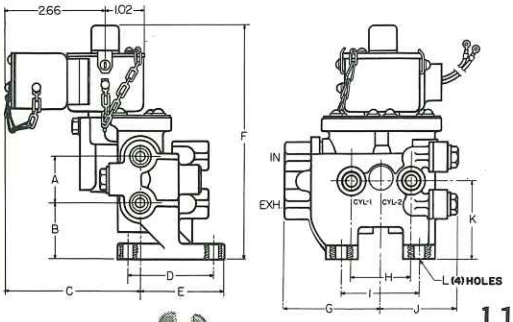
TYPE AHO



J10472AHO

*SOLENOIDS DESIGNED TO J.I.C. SPECIFICATIONS.

The solenoid is inoperative when the cover is removed and there is a manual override which is safe against accidental actuation. The conduit connector is threaded and the pressure ring terminals are on 6" free leads. Captive cover plates protect the solenoid and junction box to seal them against airborne contamination. The cover plates are secured by captive screws.



J 1047 AHO Series • Sub-Base • J.I.C. Solenoid*

VALVE CHARACTERISTICS AND ORDERING DATA

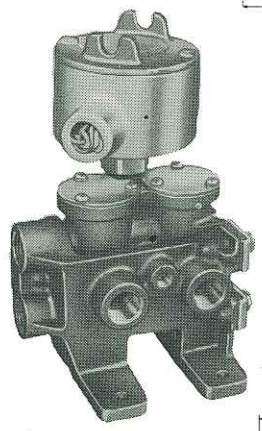
IMPORTANT: When ordering please specify: Size, Ordering Number, Pressure Range, Voltage and Frequency.

Pipe Size (I.P.S.)	Free Air Flow at 100 P.S.I. CuFt/Min.	PRESSURE RANGE (P.S.I.)	ORDERING NUMBER	LIST PRICE	Shipping Weight Pounds
1/4"	44	0-150	J10472AHO	60.00	7
3/8"	99	0-150	J10473AHO	65.90	9
1/2"	221	0-150	J10474AHO	78.50	11
3/4"	417	0-150	J10475AHO	109.50	13

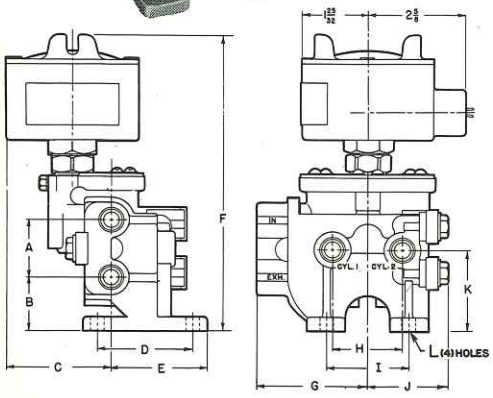
STANDARD VOLTAGES: 24, 115, 230, 460 or 550 Volts, 60 Cycles AC; 115 or 230V, 25C; 115 or 230V, 30C; 115, 230 or 460V, 50C; 6, 12 or 24V DC. For other voltages and frequencies consult Factory, stating lot quantity involved.

DIMENSIONS

VALVE SIZE	A	B	C	D	E	F	G	H	I	J	K	L
1/4"	1 1/4	1 31/64	3 11/16	2 1/4	2 9/32	6 1/4	2 19/32	1 9/16	2 1/64	1 29/32	2 7/64	9/32
3/8"	1 9/16	1 1/2	3 3/4	2 1/2	2 17/32	6 5/8	2 29/32	1 13/16	2 3/16	2 1/8	2 15/64	11/32
1/2"	1 53/64	1 41/64	3 13/16	2 7/8	2 25/32	7 1/8	3 1/32	2 1/8	2 5/8	2 13/32	2 9/16	11/32
3/4"	2 3/8	1 13/16	4	2 7/8	3	8 1/8	3 9/16	2 3/4	3 5/8	2 7/8	3	11/32



11413AHO



1141 AHO Series • Sub-Base • Explosion-Proof Solenoid

VALVE CHARACTERISTICS AND ORDERING DATA

IMPORTANT: When ordering please specify: Size, Ordering Number, Pressure Range, Voltage and Frequency.

Pipe Size (I.P.S.)	Free Air Flow at 100 P.S.I. CuFt/Min.	PRESSURE RANGE (P.S.I.)	ORDERING NUMBER	LIST PRICE	Shipping Weight Pounds
1/4"	44	0-150	11412AHO	76.00	9
3/8"	99	0-150	11413AHO	81.90	11
1/2"	221	0-150	11414AHO	94.50	12 3/4
3/4"	417	0-150	11415AHO	125.50	15

STANDARD VOLTAGES: 24, 115, 230, 460 or 550 Volts, 60 Cycles AC; 115 or 230V, 25C; 115 or 230V, 30C; 115, 230 or 460V, 50C. Class B coils supplied for all DC voltages: For 6, 12, or 24 Volts DC, add $1.50 List. For other voltages and frequencies consult Factory, stating lot quantity involved.

DIMENSIONS

VALVE SIZE	A	B	C	D	E	F	G	H	I	J	K	L
1/4"	1 1/4	1 31/64	2 23/32	2 1/4	2 9/32	7 19/32	2 19/32	1 9/16	2 1/64	1 29/32	2 7/64	9/32
3/8"	1 9/16	1 1/2	2 25/32	2 1/2	2 17/32	8"	2 29/32	1 13/16	2 3/16	2 1/8	2 15/64	11/32
1/2"	1 53/64	1 41/64	2 27/32	2 7/8	2 25/32	8 1/2	3 1/32	2 1/8	2 5/8	2 13/32	2 9/16	11/32
3/4"	2 3/8	1 13/16	3 1/32	2 7/8	3"	9 1/2	3 9/16	2 3/4	3 5/8	2 7/8	3"	11/32

MOMENTARY CONTACT • Solenoid-Pilot 4-Way and 3-Way Crescent Valves

SINGLE SOLENOID

Current is required only momentarily to change the position of the valve. This applies to all the two-position four-way and three-way valves listed on the following pages. When the solenoid is energized the pilot valve is actuated (which in turn operates the main valve). The pilot valve is latched in the actuated position and remains there after the current is off. On the next electrical impulse the pilot valve is re-actuated (both the pilot valve and main valve return to their former position) and remain in that position with the power off.

DUAL SOLENOID

Dual solenoids prevent the valve from getting out of phase, particularly important in automated systems. If the same solenoid is energized twice in succession, the position of the valve will not be changed. The opposite solenoid must be energized to reverse the valve. Otherwise the operation is the same as described above for the single solenoid units.

FOR SPECIFIC INFORMATION REGARDING FLOW PATTERN AND VALVE TYPE REFER TO THE FOLLOWING PAGES:

4-Way, Integral pilot (1046AH Series), page 18

4-Way External pilot supply (1046AHO Series), page 21

4-Way Dual Pressure (1046AHON2 Series), page 24

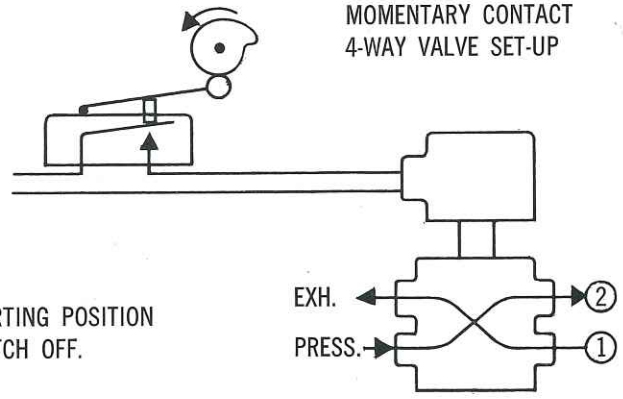
4-Way Sub-base, Integral Pilot (1047AH Series), page 27

4-Way Sub-base, External Pilot (1047AHO), page 30

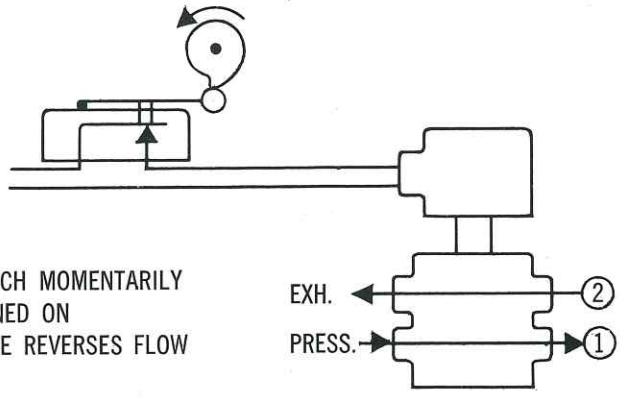
3-Way, Integral Pilot (1034 Series), page 12

3-Way, External Pilot (1038 Series), page 14

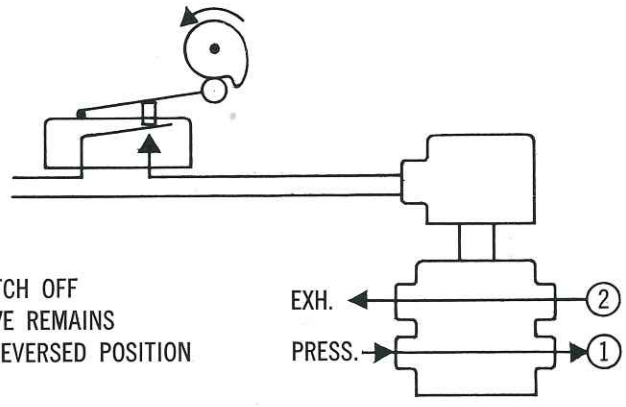
TYPICAL SINGLE SOLENOID
MOMENTARY CONTACT
4-WAY VALVE SET-UP



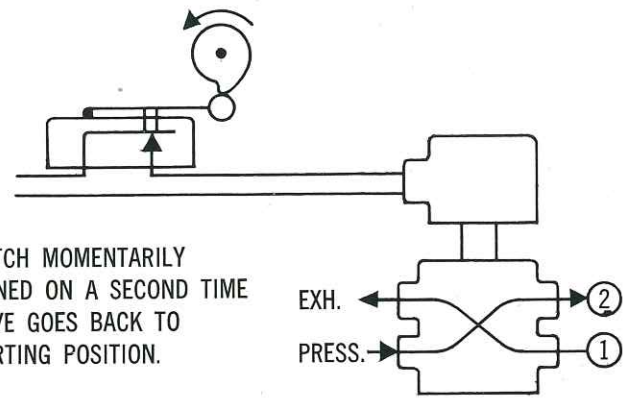
STARTING POSITION
SWITCH OFF.



SWITCH MOMENTARILY
TURNED ON
VALVE REVERSES FLOW



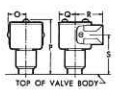
SWITCH OFF
VALVE REMAINS
IN REVERSED POSITION

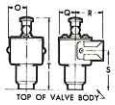


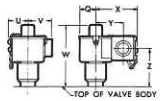
SWITCH MOMENTARILY
TURNED ON A SECOND TIME
VALVE GOES BACK TO
STARTING POSITION.

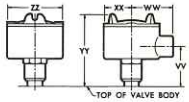
ORDERING INFORMATION

SINGLE SOLENOID • 4-WAY • INTEGRAL PILOT









VALVE DATA

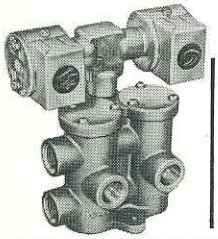
Pipe Size (I.P.S.)	Free Air Flow at 100 P.S.I. CuFt/Min.	PRESSURE RANGE (P.S.I.)	STANDARD SOLENOID ORDERING NUMBER	LIST PRICE	Ship. Wt. Lbs.	WITH MANUAL OVERRIDE ORDERING NUMBER	LIST PRICE Non-Locking Manual Override	LIST PRICE Locking Manual Override	Ship. Wt. Lbs.	J.I.C. TYPE SOLENOID ORDERING NUMBER	LIST PRICE	Ship. Wt. Lbs.	EXPLOSION-PROOF SOL. ORDERING NUMBER	LIST PRICE	Ship. Wt. Lbs.
1/4"	44	30-150	1-10462AH	52.65	4 1/2	1-10462AHMK	54.50	55.15	4 1/2	1-J10462AH	57.15	4 3/4	1-11402AH	73.15	6 3/4
3/8"	99	30-150	1-10463AH	58.85	5 3/4	1-10463AHMK	60.70	61.35	5 3/4	1-J10463AH	63.35	6	1-11403AH	79.35	8
1/2"	221	30-150	1-10464AH	67.25	7	1-10464AHMK	69.10	69.75	7	1-J10464AH	71.75	7 1/4	1-11404AH	87.75	9 1/4
3/4"	417	30-150	1-10465AH	92.50	11 1/4	1-10465AHMK	94.35	95.00	11 1/4	1-J10465AH	97.00	11 1/2	1-11405AH	112.25	13 1/2

SINGLE SOLENOID • 4-WAY • EXTERNAL PILOT SUPPLY

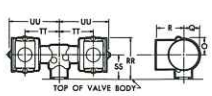
1/4"	44	0-150	1-10462AHO	52.65	4 1/2	1-10462AHOMK	54.50	55.15	4 1/2	1-J10462AHO	57.15	4 3/4	1-11402AHO	73.15	6 3/4
3/8"	99	0-150	1-10463AHO	58.85	5 3/4	1-10463AHOMK	60.70	61.35	5 3/4	1-J10463AHO	63.35	6	1-11403AHO	79.35	8
1/2"	221	0-150	1-10464AHO	67.25	7	1-10464AHOMK	69.10	69.75	7	1-J10464AHO	71.75	7 1/4	1-11404AHO	87.75	9 1/4
3/4"	417	0-150	1-10465AHO	92.50	11 1/4	1-10465AHOMK	94.35	95.00	11 1/4	1-J10465AHO	97.00	11 1/2	1-11405AHO	112.25	13 1/2

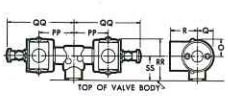
SINGLE SOLENOID • 4-WAY DUAL PRESSURE • EXTERNAL PILOT SUPPLY

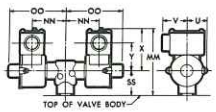
1/4"	44	0-150	1-10462AHON2	54.25	4 3/4	1-10462AHON2MK	56.10	56.75	4 3/4	1-J10462AHON2	58.75	5	1-11402AHON2	74.75	7
3/8"	99	0-150	1-10463AHON2	60.65	6	1-10463AHON2MK	62.50	63.15	6	1-J10463AHON2	65.15	6 1/4	1-11403AHON2	81.15	8 1/4
1/2"	221	0-150	1-10464AHON2	69.25	7 1/4	1-10464AHON2MK	71.10	71.75	7 1/4	1-J10464AHON2	73.75	7 1/2	1-11404AHON2	89.75	9 1/2
3/4"	417	0-150	1-10465AHON2	94.70	11 3/4	1-10465AHON2MK	96.55	97.20	11 3/4	1-J10465AHON2	99.20	12	1-11405AHON2	114.45	14

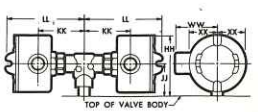


DUAL SOLENOID • 4-WAY • INTEGRAL PILOT









1/4"	44	30-150	2-10462AH	65.65	5 1/2	2-10462AHMK	67.50	68.15	5 1/2	2-J10462AH	74.65	6	2-11402AH	105.65	10
3/8"	99	30-150	2-10463AH	71.85	6 3/4	2-10463AHMK	73.70	74.35	6 3/4	2-J10463AH	80.85	7 1/4	2-11403AH	111.85	11 1/4
1/2"	221	30-150	2-10464AH	80.25	8	2-10464AHMK	82.10	82.75	8	2-J10464AH	89.25	8 1/2	2-11404AH	120.25	12 1/2
3/4"	417	30-150	2-10465AH	105.50	12 1/4	2-10465AHMK	107.35	108.00	12 1/4	2-J10465AH	114.50	12 3/4	2-11405AH	144.75	16 3/4

DUAL SOLENOID • 4-WAY • EXTERNAL PILOT SUPPLY

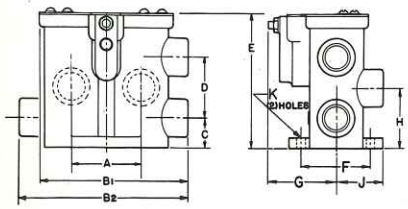
1/4"	44	0-150	2-10462AHO	65.65	5 1/2	2-10462AHOMK	67.50	68.15	5 1/2	2-J10462AHO	74.65	6	2-11402AHO	105.65	10
3/8"	99	0-150	2-10463AHO	71.85	6 3/4	2-10463AHOMK	73.70	74.35	6 3/4	2-J10463AHO	80.85	7 1/4	2-11403AHO	111.85	11 1/4
1/2"	221	0-150	2-10464AHO	80.25	8	2-10464AHOMK	82.10	82.75	8	2-J10464AHO	89.25	8 1/2	2-11404AHO	120.25	12 1/2
3/4"	417	0-150	2-10465AHO	105.50	12 1/4	2-10465AHOMK	107.35	108.00	12 1/4	2-J10465AHO	114.50	12 3/4	2-11405AHO	144.75	16 3/4

DUAL SOLENOID • 4-WAY DUAL PRESSURE • EXTERNAL PILOT SUPPLY

1/4"	44	0-150	2-10462AHON2	67.25	5 3/4	2-10462AHON2MK	69.10	69.75	5 3/4	2-J10462AHON2	76.25	6 1/4	2-11402AHON2	107.25	10 1/4
3/8"	99	0-150	2-10463AHON2	73.65	7	2-10463AHON2MK	75.50	76.15	7	2-J10463AHON2	82.65	7 1/2	2-11403AHON2	113.65	11 1/2
1/2"	21	0-150	2-10464AHON2	82.25	8 1/4	2-10464AHON2MK	84.10	84.75	8 1/4	2-J10464AHON2	91.25	8 3/4	2-11404AHON2	122.25	12 3/4
3/4"	417	0-150	2-10465AHON2	107.70	12 3/4	2-10465AHON2MK	109.55	110.20	12 3/4	2-J10465AHON2	116.70	13 1/4	2-11405AHON2	146.95	17 1/4

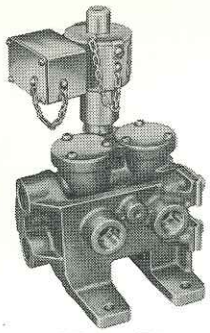
SOLENOID DIMENSIONS (Common to all sizes of 4-way valves)

O	P	Q	R	S	T	U	V	W	X
1 7/64	3 15/16	1 1/32	1 3/4	2 7/16	4 5/8	1 1/4	1 1/2	3 31/32	2 3/4
Y	**Z**	**ZZ**	**YY**	**XX**	**WW**	**VV**	**UU**	**TT**	**SS**
1 51/64	2 17/32	3 9/16	4 49/64	1 25/32	2 5/8	2 19/32	3 1/8	2 3/32	1 9/16
RR	**QQ**	**PP**	**OO**	**NN**	**MM**	**LL**	**KK**	**JJ**	**HH**
2 43/64	4 9/32	2 3/32	3 5/8	2 11/64	4 5/16	5 3/32	2 29/32	2 3/64	3 53/64



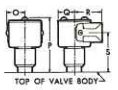
VALVE DIMENSIONS (1046AH, 1046AHO, and 1046AHON2 SERIES)

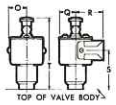
VALVE SIZE	A	B_1	B_2	C	D	E	F	G	H	J	K
1/4"	1 9/16	3 13/32	3 11/16	25/32	1 1/4	3 3/32	1 11/16	1 15/16	1 7/16	1 1/16	9/32
3/8"	1 13/16	3 29/32	4 1/4	25/32	1 9/16	3 1/2	1 15/16	2	1 17/32	1 1/4	9/32
1/2"	2 1/8	4 17/32	5	15/16	1 27/32	3 31/32	2 1/8	2 1/16	1 27/32	1 7/16	9/32
3/4"	2 3/4	5 21/32	6 1/4	1 1/16	2 13/32	4 59/64	2 9/16	2 1/4	2 1/4	1 3/4	9/32

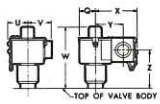


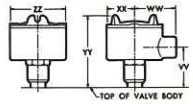
ORDERING INFORMATION

SINGLE SOLENOID • 4-WAY SUB-BASE • INTEGRAL PILOT







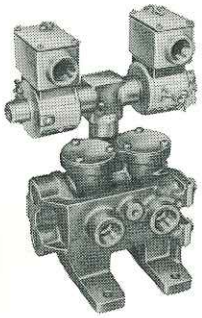


VALVE DATA

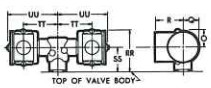
Pipe Size (I.P.S.)	Free Air Flow at 100 P.S.I. CuFt/Min.	PRESSURE RANGE (P.S.I.)	STANDARD SOLENOID ORDERING NUMBER	STANDARD SOLENOID LIST PRICE	STANDARD SOLENOID Ship. Wt. Lbs.	WITH MANUAL OVERRIDE ORDERING NUMBER	WITH MANUAL OVERRIDE LIST PRICE Non-Locking Manual Override	WITH MANUAL OVERRIDE LIST PRICE Locking Manual Override	WITH MANUAL OVERRIDE Ship. Wt. Lbs.	J.I.C. TYPE SOLENOID ORDERING NUMBER	J.I.C. TYPE SOLENOID LIST PRICE	J.I.C. TYPE SOLENOID Ship. Wt. Lbs.	EXPLOSION-PROOF SOL ORDERING NUMBER	EXPLOSION-PROOF SOL LIST PRICE	EXPLOSION-PROOF SOL Ship. Wt. Lbs.
1/4"	44	30-150	1-10472AH	63.00	7 1/4	1-10472AHMK	64.85	65.50	7 1/4	1-J10472AH	67.50	7 1/2	1-11412AH	83.50	9 1/2
3/8"	99	30-150	1-10473AH	68.90	9 1/4	1-10473AHMK	70.75	71.40	9 1/4	1-J10473AH	73.40	9 1/2	1-11413AH	89.40	11 1/2
1/2"	221	30-150	1-10474AH	81.50	10 3/4	1-10474AHMK	83.35	84.00	10 3/4	1-J10474AH	86.00	11	1-11414AH	102.00	13
3/4"	417	30-150	1-10475AH	112.50	13 1/4	1-10475AHMK	114.35	115.00	13 1/4	1-J10475AH	117.00	13 1/2	1-11415AH	133.00	15 1/2

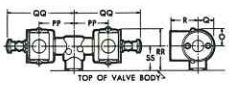
SINGLE SOLENOID • 4-WAY SUB-BASE • EXTERNAL PILOT SUPPLY

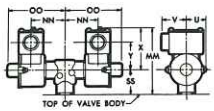
1/4"	44	0-150	1-10472AHO	63.00	7 1/4	1-10472AHOMK	64.85	65.50	7 1/4	1-J10472AHO	67.50	7 1/2	1-11412AHO	83.50	9 1/2
3/8"	99	0-150	1-10473AHO	68.90	9 1/4	1-10473AHOMK	70.75	71.40	9 1/4	1-J10473AHO	73.40	9 1/2	1-11413AHO	89.40	11 1/2
1/2"	221	0-150	1-10474AHO	81.50	10 3/4	1-10474AHOMK	83.35	84.00	10 3/4	1-J10474AHO	86.00	11	1-11414AHO	102.00	13
3/4"	417	0-150	1-10475AHO	112.50	13 1/4	1-10475AHOMK	114.35	115.00	13 1/4	1-J10475AHO	117.00	13 1/2	1-11415AHO	133.00	15 1/2

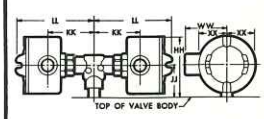


DUAL SOLENOID • 4-WAY SUB-BASE • INTEGRAL PILOT









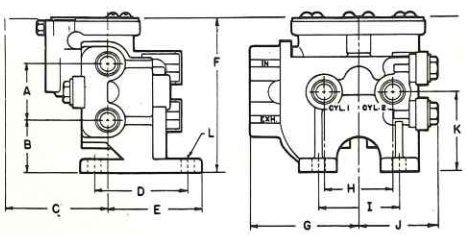
1/4"	44	30-150	2-10472AH	76.00	8 3/4	2-10472AHMK	77.85	78.50	8 3/4	2-J10472AH	85.00	8 3/4	2-11412AH	116.00	12 3/4
3/8"	99	30-150	2-10473AH	81.90	10 3/4	2-10473AHMK	83.75	84.40	10 3/4	2-J10473AH	90.90	10 3/4	2-11413AH	121.90	14 3/4
1/2"	221	30-150	2-10474AH	94.50	12 1/4	2-10474AHMK	96.35	97.00	12 1/4	2-J10474AH	103.50	12 1/4	2-11414AH	134.50	16 1/4
3/4"	417	30-150	2-10475AH	125.50	14 3/4	2-10475AHMK	127.35	128.00	14 3/4	2-J10475AH	134.50	14 3/4	2-11415AH	165.50	18 3/4

DUAL SOLENOID • 4-WAY SUB-BASE • EXTERNAL PILOT SUPPLY

1/4"	44	0-150	2-10472AHO	76.00	8 3/4	2-10472AHOMK	77.85	78.50	8 3/4	2-J10472AHO	85.00	8 3/4	2-11412AHO	116.00	12 3/4
3/8"	99	0-150	2-10473AHO	81.90	10 3/4	2-10473AHOMK	83.75	84.40	10 3/4	2-J10473AHO	90.90	10 3/4	2-11413AHO	121.90	14 3/4
1/2"	221	0-150	2-10474AHO	94.50	12 1/4	2-10474AHOMK	96.35	97.00	12 1/4	2-J10474AHO	103.50	12 1/4	2-11414AHO	134.50	16 1/4
3/4"	417	0-150	2-10475AHO	125.50	14 3/4	2-10475AHOMK	127.35	128.00	14 3/4	2-J10475AHO	134.50	14 3/4	2-11415AHO	165.50	18 3/4

SOLENOID DIMENSIONS (Common to all sizes of 4-way valves)

O	P	Q	R	S	T	U	V	W	X
1 7/64	3 15/16	1 1/32	1 3/4	2 7/16	4 5/8	1 1/4	1 1/2	3 31/32	2 3/4
Y	Z	ZZ	YY	XX	WW	VV	UU	TT	SS
1 51/64	2 17/32	3 9/16	4 49/64	1 25/32	2 5/8	2 19/32	3 1/8	2 3/32	1 9/16
RR	QQ	PP	OO	NN	MM	LL	KK	JJ	HH
2 43/64	4 9/32	2 3/32	3 5/8	2 11/64	4 5/16	5 3/32	2 29/32	2 3/64	3 53/64

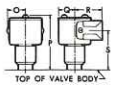


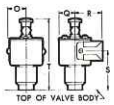
VALVE DIMENSIONS (1047AH and 1047AHO SERIES)

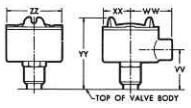
VALVE SIZE	A	B	C	D	E	F	G	H	I	J	K	L
1/4"	1 1/4	1 31/64	1 31/32	2 1/4	2 9/32	3 25/32	2 19/32	1 9/16	2 1/64	1 29/32	2 7/64	9/32
3/8"	1 9/16	1 29/64	2 1/32	2 1/2	2 17/32	4 13/64	2 29/32	1 13/16	2 3/16	2 1/16	2 15/64	11/32
1/2"	1 53/64	1 41/64	2 3/32	2 7/8	2 25/32	4 11/16	3 1/32	2 1/8	2 5/8	2 11/32	2 9/16	11/32
3/4"	2 3/8	1 13/16	2 3/8	2 7/8	3	5 43/64	3 9/16	2 3/4	3 5/8	2 7/8	3	11/32

ORDERING INFORMATION

SINGLE SOLENOID • 3-WAY • INTEGRAL PILOT

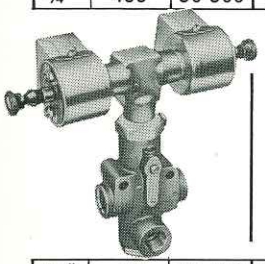




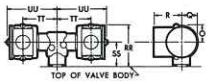


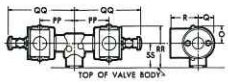
VALVE DATA

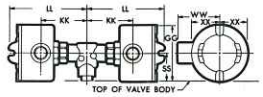
Pipe Size (I.P.S.)	Free Air Flow at 100 P.S.I. CuFt/Min.	PRESSURE RANGE (P.S.I.)	STANDARD SOLENOID ORDERING NUMBERS Normally Open	Normally Closed	LIST PRICE	Ship. Wt. Lbs.	WITH MANUAL OVERRIDE ORDERING NUMBERS Normally Open	Normally Closed	LIST PRICE Non-Locking Manual Override	Locking Manual Override	Ship. Wt. Lbs.	EXPLOSION-PROOF SOLENOID ORDERING NUMBERS Normally Open	Normally Closed	LIST PRICE	Ship. Wt. Lbs.
¼"	77	30-150	1-103421	1-103422	43.75	3½	1-103421MK	1-103422MK	45.90	46.40	3½	1-103721	1-103722	61.20	5¾
⅜"	165	30-150	1-103431	1-103432	45.00	4	1-103431MK	1-103432MK	47.15	47.65	4	1-103731	1-103732	62.60	6¼
½"	269	30-150	1-103441	1-103442	48.60	4¼	1-103441MK	1-103442MK	50.75	51.25	4¼	1-103741	1-103742	65.50	6½
¾"	438	30-150	1-103461	1-103462	55.00	6½	1-103461MK	1-103462MK	57.15	57.65	6½	1-103761	1-103762	73.60	8¾
SINGLE SOLENOID • 3-WAY • EXTERNAL PILOT SUPPLY															
¾"	77	0-150	1-103821	1-103822	43.75	3½	1-103821MK	1-103822MK	45.90	46.40	3½	1-103921	1-103922	61.20	5¾
⅜"	165	0-150	1-103831	1-103832	45.00	4	1-103831MK	1-103832MK	47.15	47.65	4	1-103931	1-103932	62.60	6¼
½"	269	0-150	1-103841	1-103842	48.60	4¼	1-103841MK	1-103842MK	50.75	51.25	4¼	1-103941	1-103942	65.50	6½
¾"	438	0-150	1-103861	1-103862	55.00	6½	1-103861MK	1-103862MK	57.15	57.65	6½	1-103961	1-103962	73.60	8¾
SINGLE SOLENOID • 3-WAY (50 to 500 P.S.I.) • EXTERNAL PILOT SUPPLY															
¼"	77	50-500	1-103825	1-103826	46.75	3½	1-103825MK	1-103826MK	48.90	49.40	3½	1-103925	1-103926	64.20	5¾
⅜"	165	50-500	1-103835	1-103836	48.50	4	1-103835MK	1-103836MK	50.65	51.15	4	1-103935	1-103936	66.10	6¼
½"	269	50-500	1-103843	1-103844	52.60	4¼	1-103843MK	1-103844MK	54.75	55.25	4¼	1-103943	1-103944	69.50	6½
¾"	438	50-500	1-103863	1-103864	59.50	6½	1-103863MK	1-103864MK	61.65	62.15	6½	1-103963	1-103964	78.10	8¾



DUAL SOLENOID • 3-WAY • INTEGRAL PILOT



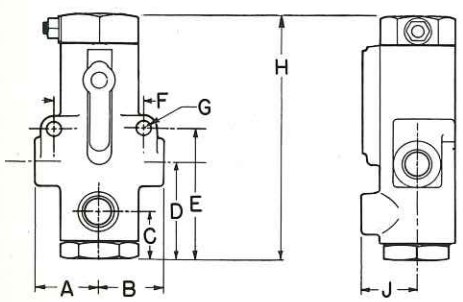




¼"	77	30-150	2-103421	2-103422	56.75	4½	2-103421MK	2-103422MK	58.90	59.40	4½	2-103721	2-103722	93.70	9
⅜"	165	30-150	2-103431	2-103432	58.00	5	2-103431MK	2-103432MK	60.15	60.65	5	2-103731	2-103732	95.10	9½
½"	269	30-150	2-103441	2-103442	61.60	5¼	2-103441MK	2-103442MK	63.75	64.25	5¼	2-103741	2-103742	98.00	9¾
¾"	438	30-150	2-103461	2-103462	68.00	7½	2-103461MK	2-103462MK	70.15	70.65	7½	2-103761	2-103762	106.10	12
DUAL SOLENOID • 3-WAY • EXTERNAL PILOT SUPPLY															
¼"	77	0-150	2-103821	2-103822	56.75	4½	2-103821MK	2-103822MK	58.90	59.40	4½	2-103921	2-103922	93.70	9
⅜"	165	0-150	2-103831	2-103832	58.00	5	2-103831MK	2-103832MK	60.15	60.65	5	2-103931	2-102932	95.10	9½
½"	269	0-150	2-103841	2-103842	61.60	5¼	2-103841MK	2-103842MK	63.75	64.25	5¼	2-103941	2-103942	98.00	9¾
¾"	438	0-150	2-103861	2-103862	68.00	7½	2-103861MK	2-103862MK	70.15	70.65	7½	2-103961	2-103962	106.10	12
DUAL SOLENOID • 3-WAY (50 to 500 P.S.I.) • EXTERNAL PILOT SUPPLY															
¼"	77	50-500	2-103825	2-103826	59.75	4½	2-103825MK	2-103826MK	61.90	62.40	4½	2-103925	2-103926	96.70	9
⅜"	165	50-500	2-103835	2-103836	61.50	5	2-103835MK	2-103836MK	63.65	64.15	5	2-103935	2-103936	98.60	9½
½"	269	50-500	2-103843	2-103844	65.60	5¼	2-103843MK	2-103844MK	67.75	68.25	5¼	2-103943	2-103944	102.00	9¾
¾"	438	50-500	2-103863	2-103864	72.50	7½	2-103863MK	2-103864MK	74.65	75.15	7½	2-103963	2-103964	110.60	12

SOLENOID DIMENSIONS (Common to all sizes of 3-way valves)

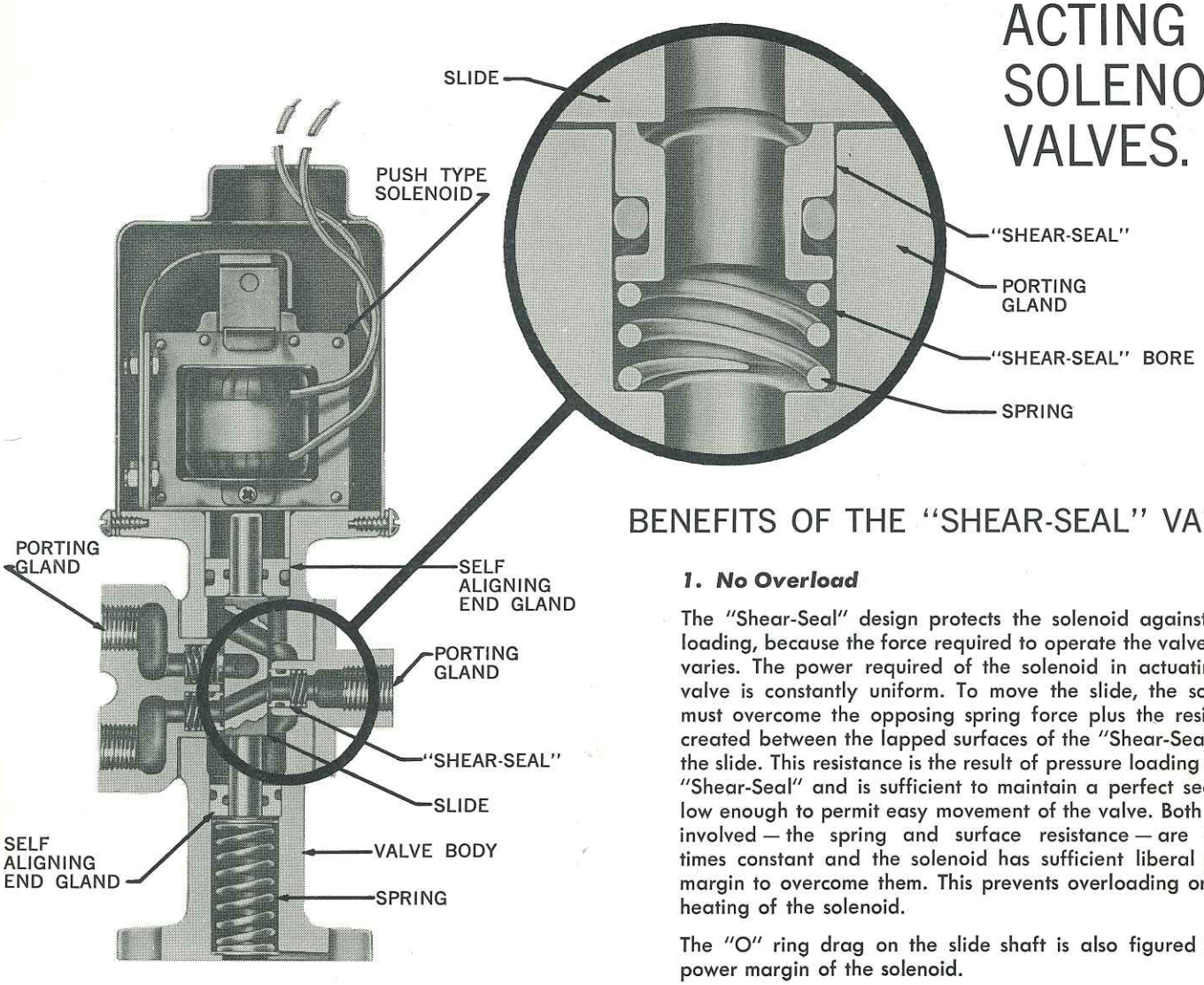
O	P	Q	R	S	T	ZZ	YY	XX	WW
1 7/64	3 15/32	1 1/32	1 3/4	2 7/16	4 5/8	3 9/16	4 49/64	1 25/32	2 5/8
VV	UU	TT	SS	RR	QQ	PP	LL	KK	GG
2 19/32	3 1/8	2 3/32	1 9/16	2 43/64	4 9/32	2 3/32	5 3/32	2 29/32	3 11/32



VALVE DIMENSIONS (1034, 1037, 1038 and 1039 SERIES)

VALVE SIZE	A	B	C	D	E	F	G	H	J
¼"	1 1/16	1 3/16	29/32	1 13/16	2 15/32	1 7/16	17/64	4 15/32	1 1/16
⅜"	1 1/4	1 7/16	1	2 3/32	2 7/8	1 1/2	21/64	4 47/64	1 9/32
½"	1 3/8	1 1/2	1 3/32	2 7/32	3 1/32	1 5/8	21/64	5	1 5/16
¾"	1 9/16	1 11/16	1 9/32	2 3/4	3 23/32	1 13/16	21/64	5 43/64	1 19/32

The "Shear-Seal" principle as applied to DIRECT ACTING SOLENOID VALVES.



Direct acting solenoid "Shear-Seal" valves have only one moving part. This is the slide containing the cross flow passages. This slide is positioned in the body bore by two self-aligning end glands. In the de-energized position a compression spring maintains the slide in its normal position. When the push-type solenoid is energized the plunger force overcomes the spring force; it pushes the slide into an extreme opposite position. This up or down positioning changes alignment between the flow passages in the slide and the flow passages of the "Shear-Seals." This changes or blocks the flow of air pressure from one outlet to another.

The "Shear-Seals" are contained in the porting glands which are bolted to the valve body. These porting glands have a precision-bored hole. A spring is dropped into the bottom of the bore and a "Shear-Seal" placed on top of the spring. The "Shear-Seal" is a tubular metal cylinder with an "O" ring seal inserted into a groove on its outside diameter. This "O" ring provides a stationary seal between the "Shear-Seal" and the "Shear-Seal" bore. The rim of the cylindrical "Shear-Seal" is lapped to optical flatness and when in contact with the lapped surfaces of the slide forms the actual valve seal. The whole assembly forms a straight-lined round tubular continuation of the piping, unobstructed by spools or poppets. This means more air flow. A smaller "Shear-Seal" valve will handle the same amount of flow as larger spool valves.

BENEFITS OF THE "SHEAR-SEAL" VALVE.

1. No Overload

The "Shear-Seal" design protects the solenoid against overloading, because the force required to operate the valve never varies. The power required of the solenoid in actuating the valve is constantly uniform. To move the slide, the solenoid must overcome the opposing spring force plus the resistance created between the lapped surfaces of the "Shear-Seal" and the slide. This resistance is the result of pressure loading on the "Shear-Seal" and is sufficient to maintain a perfect seal, but low enough to permit easy movement of the valve. Both forces involved — the spring and surface resistance — are at all times constant and the solenoid has sufficient liberal power margin to overcome them. This prevents overloading or overheating of the solenoid.

The "O" ring drag on the slide shaft is also figured in the power margin of the solenoid.

2. Not Critical to Dirt

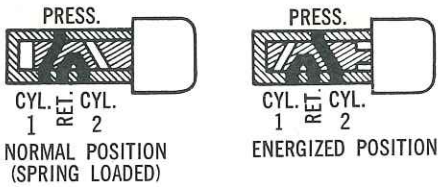
When a "Shear-Seal" valve is in any one of its flow positions the air passes through the hollow bore of the "Shear-Seal" and the flow passages of the slide, thus preventing erosion from any dirt which may be carried across the face of the sealing surfaces. These lapped sealing surfaces are always protected since they are in metal-to-metal contact. Thus, dirt, pipe scale, or other particles cannot get between them to score or damage them in any way. Dirt is a common cause for the high maintenance required on spool valves. Dirt forced into spool clearances causes valve to freeze-up or bind. Result: Overloaded solenoid and coil burn-out.

3. Automatic Wear Compensation Keeps Valve Leakproof

A "Shear-Seal" valve will give a longer service life than a valve of any other design principle because it automatically compensates for wear. As the valve is operated, the lapped surfaces of the "Shear-Seal" and slide are constantly polishing each other. Although slight wear occurs, the spring behind the back of the "Shear-Seal" compensates for this wear automatically by keeping the "Shear-Seal" forced against the slide. At low pressures, or even vacuum, the spring pressure itself is sufficient to maintain a perfect seal, thus preventing leakage under all conditions.

4-WAY • DIRECT SOLENOID • 0 to 250 P.S.I. • "SHEAR-SEAL" VALVES

FLOW PATTERN OF 4-WAY VALVES

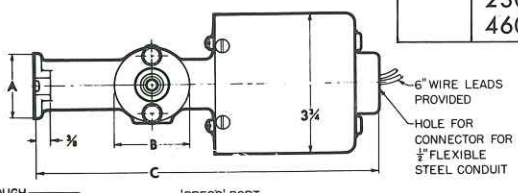


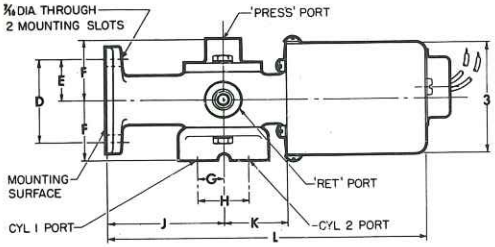
STANDARD A.C.

1760 Series • 2 Position Standard A.C. Solenoid

VALVE CHARACTERISTICS AND ORDERING DATA

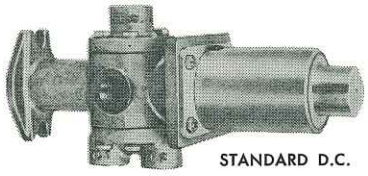
Port Size NPT	Volts	Free Air Flow CuFt/Min.	PRESSURE RANGE P.S.I.	VALVE NUMBER	LIST PRICE		Approx. Shipping Wt., Lbs.
					Valve	Solenoid	
1/4"	115 230 460	150	0-250	1761SOAS2A1 1761SOAS2A2 1761SOAS2A4	59.00	13.90	5½
3/8"	115 230 460	350	0-250	1762SOAS2A1 1762SOAS2A2 1762SOAS2A4	71.00	17.40	7½
1/2"	115 230 460	350	0-250	1763SOAS2A1 1763SOAS2A2 1763SOAS2A4	76.00	17.40	7½





DIMENSIONS

VALVE SIZE	A	B	C	D	E	F	G	H	J	K	L
1/4"	2¼	2	9 1/16	2¼	1⅛	1 21/32	11/16	1⅜	3 3/32	1⅝	8 7/16
3/8"	2½	2½	9 13/16	2⅝	1 5/16	2 3/16	⅞	1¾	3½	1 31/32	9 3/16
1/2"	2½	2½	9 13/16	2⅝	1 5/16	2 3/16	⅞	1¾	3½	1 31/32	9 3/16

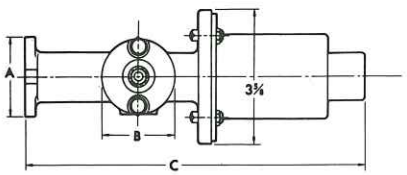


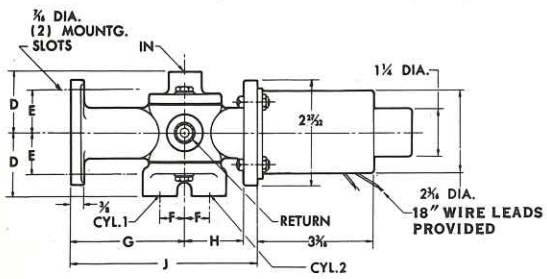
STANDARD D.C.

1760 Series • 2 Position Standard D.C. Solenoid

VALVE CHARACTERISTICS AND ORDERING DATA

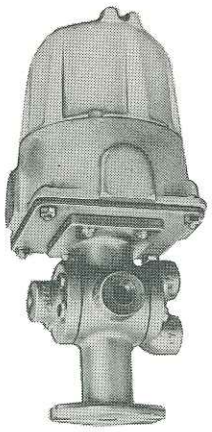
Port Size NPT	Volts	Free Air Flow CuFt/Min.	PRESSURE RANGE P.S.I.	VALVE NUMBER	LIST PRICE		Approx. Shipping Wt., Lbs.
					Valve	Solenoid	
1/4"	12 24 125	150	0-250	1761SOAS2D2 1761SOAS2D3 1761SOAS2D4	59.00 59.00 59.00	45.00 33.60 38.00	4¾
3/8"	12 24 125	350	0-250	1762SOAS2D2 1762SOAS2D3 1762SOAS2D4	71.00 71.00 71.00	45.00 33.60 38.00	6¼
1/2"	12 24 125	350	0-250	1763SOAS2D2 1763SOAS2D3 1763SOAS2D4	76.00 76.00 76.00	45.00 33.60 38.00	6¼





DIMENSIONS

VALVE SIZE	A	B	C	D	E	F	G	H	J
1/4"	2¼	2	9 5/32	1 21/32	1⅛	11/16	3 3/32	1⅝	5 3/32
3/8"	2½	2½	9⅞	2 3/16	1 5/16	⅞	3½	1 31/32	5 13/16
1/2"	2½	2½	9⅞	2 3/16	1 5/16	⅞	3½	1 31/32	5 13/16

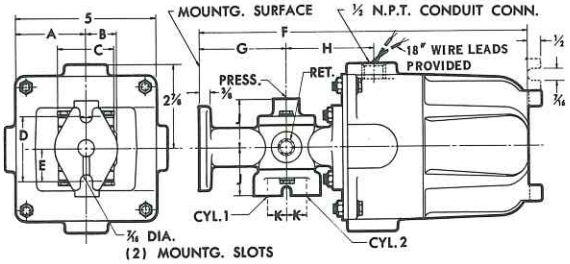


EXPLOSION-PROOF A.C.

1760 Series • Explosion-Proof A.C. Solenoid

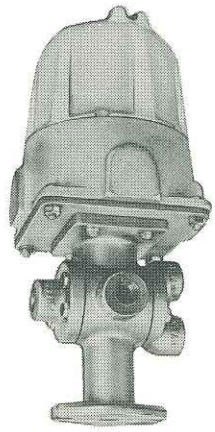
VALVE CHARACTERISTICS AND ORDERING DATA

Port Size NPT	Volts	Free Air Flow CuFt/Min.	PRESSURE RANGE P.S.I.	VALVE NUMBER	LIST PRICE		Approx. Shipping Wt., Lbs.
					Valve	Solenoid	
1/4"	115 230 460	150	0-250	X1761SOAS2A1 X1761SOAS2A2 X1761SOAS2A4	59.00	75.00	16
3/8"	115 230 460	350	0-250	X1762SOAS2A1 X1762SOAS2A2 X1762SOAS2A4	71.00	75.00	17½
1/2"	115 230 460	350	0-250	X1763SOAS2A1 X1763SOAS2A2 X1763SOAS2A4	76.00	75.00	17½



DIMENSIONS

VALVE SIZE	A	B	C	D	E	F	G	H	J	K
1/4"	2½	1 3/32	2	2¼	1⅛	1 3 7/16	3 3/32	3⅛	1 21/32	1 1/16
3/8"	2½	1 1 1/32	2½	2 5/8	1 5/16	1 4 3/16	3½	3 7/16	2 3/16	⅞
1/2"	2½	1 1 1/32	2½	2 5/8	1 5/16	1 4 3/16	3½	3 7/16	2 3/16	⅞

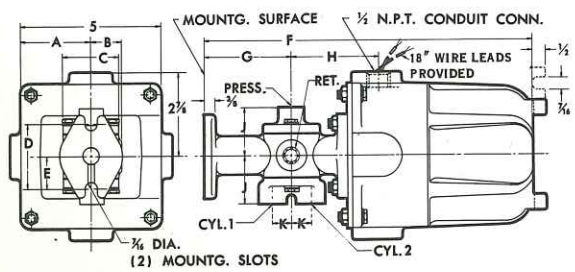


EXPLOSION-PROOF D.C.

1760 Series • Explosion-Proof D.C. Solenoid

VALVE CHARACTERISTICS AND ORDERING DATA

Port Size NPT	Volts	Free Air Flow CuFt/Min.	PRESSURE RANGE P.S.I.	VALVE NUMBER	LIST PRICE		Approx. Shipping Wt., Lbs.
					Valve	Solenoid	
1/4"	12 24 125	150	0-250	X1761SOAS2D2 X1761SOAS2D3 X1761SOAS2D4	59.00 59.00 59.00	89.00 77.60 82.00	14½
3/4"	12 24 125	350	0-250	X1762SOAS2D2 X1762SOAS2D3 X1762SOAS2D4	71.00 71.00 71.00	89.00 77.60 82.00	16
1/2"	12 24 125	350	0-250	X1763SOAS2D2 X1763SOAS2D3 X1763SOAS2D4	76.00 76.00 76.00	89.00 77.60 82.00	16

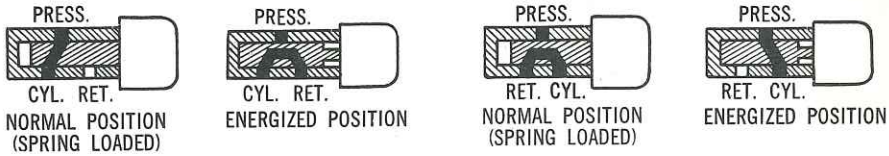


DIMENSIONS

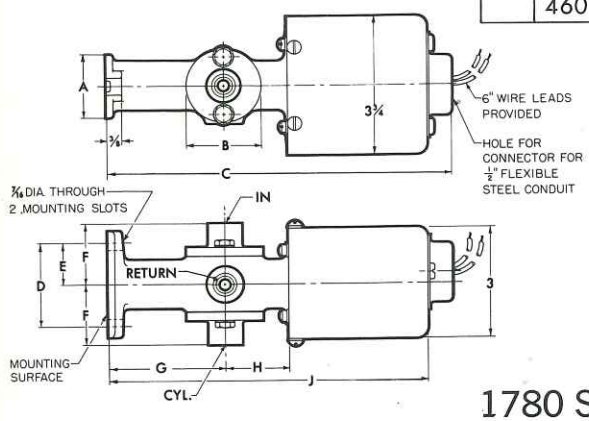
VALVE SIZE	A	B	C	D	E	F	G	H	J	K
1/4"	2½	1 3/32	2	2¼	1⅛	1 3 7/16	3 3/32	3⅛	1 21/32	1 1/16
3/8"	2½	1 1 1/32	2½	2 5/8	1 5/16	1 4 3/16	3½	3 7/16	2 3/16	⅞
1/2"	2½	1 1 1/32	2½	2 5/8	1 5/16	1 4 3/16	3½	3 7/16	2 3/16	⅞

3-WAY • DIRECT-SOLENOID • 0 to 250 P.S.I. • "SHEAR-SEAL" VALVES

FLOW PATTERNS OF 3-WAY VALVES



STANDARD A.C



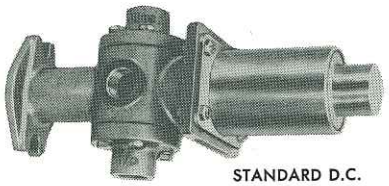
1780 Series • 2 Position Standard A.C. Solenoid

VALVE CHARACTERISTICS AND ORDERING DATA

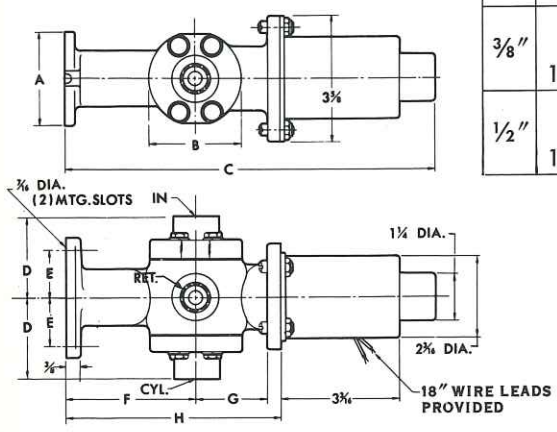
Port Size NPT	Volts	Free Air Flow CuFt/Min.	PRESSURE RANGE P.S.I.	FLOW PATTERN AND VALVE NUMBER		LIST PRICE		Approx. Shipping Wt., Lbs.
				Normally Open	Normally Closed	Valve	Solenoid	
¼"	115 230 460	150	0-250	1781SOAO2A1 1781SOAO2A2 1781SOAO2A4	1781SOAC2A1 1781SOAC2A2 1781SOAC2A4	55.00	13.90	5½
⅜"	115 230 460	350	0-250	1782SOAO2A1 1782SOAO2A2 1782SOAO2A4	1782SOAC2A1 1782SOAC2A2 1782SOAC2A4	63.00	17.40	7½
½"	115 230 460	350	0-250	1783SOAO2A1 1783SOAO2A2 1783SOAO2A4	1783SOAC2A1 1783SOAC2A2 1783SOAC2A4	68.00	17.40	7½

DIMENSIONS

VALVE SIZE	A	B	C	D	E	F	G	H	J
¼"	2¼	2	9 1/16	2¼	1⅛	1 21/32	3 3/32	1⅝	8 7/16
⅜"	2½	2½	9 13/16	2⅝	1 5/16	2 3/16	3½	1 31/32	9 3/16
½"	2½	2½	9 13/16	2⅝	1 5/16	2 3/16	3½	1 31/32	9 3/16



STANDARD D.C.



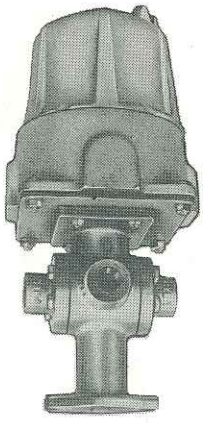
1780 Series • 2 Position Standard D.C. Solenoid

VALVE CHARACTERISTICS AND ORDERING DATA

Port Size NPT	Volts	Free Air Flow CuFt/Min.	PRESSURE RANGE P.S.I.	FLOW PATTERN AND VALVE NUMBER		LIST PRICE		Approx. Shipping Wt., Lbs.
				Normally Open	Normally Closed	Valve	Solenoid	
¼"	12 24 125	150	0-250	1781SOAO2D2 1781SOAO2D3 1781SOAO2D4	1781SOAC2D2 1781SOAC2D3 1781SOAC2D4	55.00 55.00 55.00	45.00 33.60 38.00	4¾
⅜"	12 24 125	350	0-250	1782SOAO2D2 1782SOAO2D3 1782SOAO2D4	1782SOAC2D2 1782SOAC2D3 1782SOAC2D4	63.00 63.00 63.00	45.00 33.60 38.00	6¼
½"	12 24 125	350	0-250	1783SOAO2D2 1783SOAO2D3 1783SOAO2D4	1783SOAC2D2 1783SOAC2D3 1783SOAC2D4	68.00 68.00 68.00	45.00 33.60 38.00	6¼

DIMENSIONS

VALVE SIZE	A	B	C	D	E	F	G	H
¼"	2¼	2	9 5/32	1 21/32	1⅛	3 3/32	1⅝	5 3/32
⅜"	2½	2½	9 7/8	2 3/16	1 5/16	3½	1 31/32	5 13/16
½"	2½	2½	9 7/8	2 3/16	1 5/16	3½	1 31/32	5 13/16

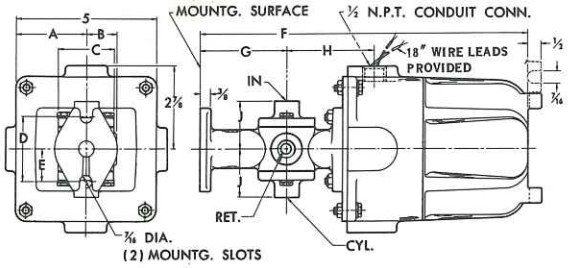


EXPLOSION-PROOF A.C.

1780 Series • Explosion-Proof A.C. Solenoid

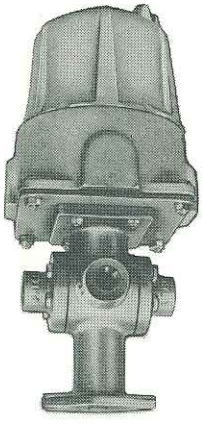
VALVE CHARACTERISTICS AND ORDERING DATA

Port Size NPT	Volts	Free Air Flow CuFt/Min.	PRESSURE RANGE P.S.I.	FLOW PATTERN AND VALVE NUMBER		LIST PRICE		Approx. Shipping Wt., Lbs.
				Normally Open	Normally Closed	Valve	Solenoid	
¼"	115 230 460	150	0-250	X1781SOAO2A1 X1781SOAO2A2 X1781SOAO2A4	X1781SOAC2A1 X1781SOAC2A2 X1781SOAC2A4	55.00	75.00	16
⅜"	115 230 460	350	0-250	X1782SOAO2A1 X1782SOAO2A2 X1782SOAO2A4	X1782SOAC2A1 X1782SOAC2A2 X1782SOAC2A4	63.00	75.00	17½
½"	115 230 460	350	0-250	X1783SOAO2A1 X1783SOAO2A2 X1783SOAO2A4	X1783SOAC2A1 X1783SOAC2A2 X1783SOAC2A4	68.00	75.00	17½



DIMENSIONS

VALVE SIZE	A	B	C	D	E	F	G	H	J
¼"	2½	1 3/32	2	2¼	1⅛	1 37/16	3 3/32	3⅛	1 21/32
⅜"	2½	1 11/32	2½	2⅝	1 5/16	1 43/16	3½	3 7/16	2 3/16
½"	2½	1 11/32	2½	2⅝	1 5/16	1 43/16	3½	3 7/16	2 3/16

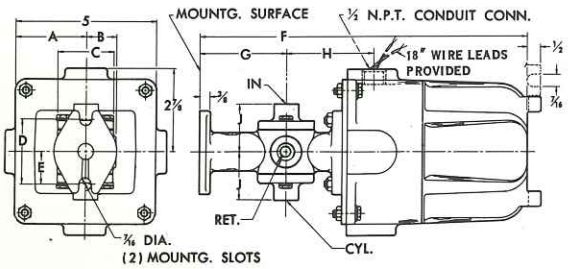


EXPLOSION-PROOF D.C.

1780 Series • Explosion-Proof D.C. Solenoid

VALVE CHARACTERISTICS AND ORDERING DATA

Port Size NPT	Volts	Free Air Flow CuFt/Min.	PRESSURE RANGE P.S.I.	FLOW PATTERN AND VALVE NUMBER		LIST PRICE		Approx. Shipping Wt., Lbs.
				Normally Open	Normally Closed	Valve	Solenoid	
¼"	12 24 125	150	0-250	X1781SOAO2D2 X1781SOAO2D3 X1781SOAO2D4	X1781SOAC2D2 X1781SOAC2D3 X1781SOAC2D4	55.00 55.00 55.00	89.00 77.60 82.00	14½
⅜"	12 24 125	350	0-250	X1782SOAO2D2 X1782SOAO2D3 X1782SOAO2D4	X1782SOAC2D2 X1782SOAC2D3 X1782SOAC2D4	63.00 63.00 63.00	89.00 77.60 82.00	16
½"	12 24 125	350	0-250	X1783SOAO2D2 X1783SOAO2D3 X1783SOAO2D4	X1783SOAC2D2 X1783SOAC2D3 X1783SOAC2D4	68.00 68.00 68.00	89.00 77.60 82.00	16

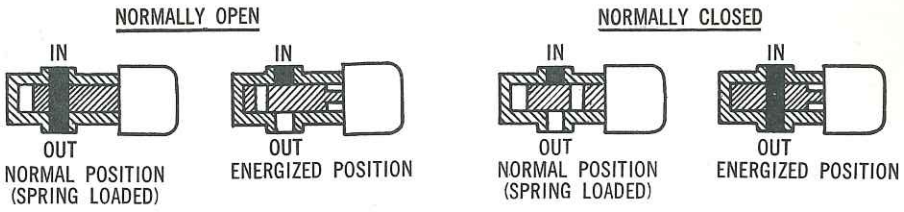


DIMENSIONS

VALVE SIZE	A	B	C	D	E	F	G	H	J
¼"	2½	1 3/32	2	2¼	1⅛	1 37/16	3 3/32	3⅛	1 21/32
⅜"	2½	1 11/32	2½	2⅝	1 5/16	1 43/16	3½	3 7/16	2 3/16
½"	2½	1 11/32	2½	2⅝	1 5/16	1 43/16	3½	3 7/16	2 3/16

SHUT-OFF • DIRECT-SOLENOID • 0 to 250 P.S.I. • "SHEAR-SEAL" VALVES

FLOW PATTERNS OF SHUT-OFF VALVES

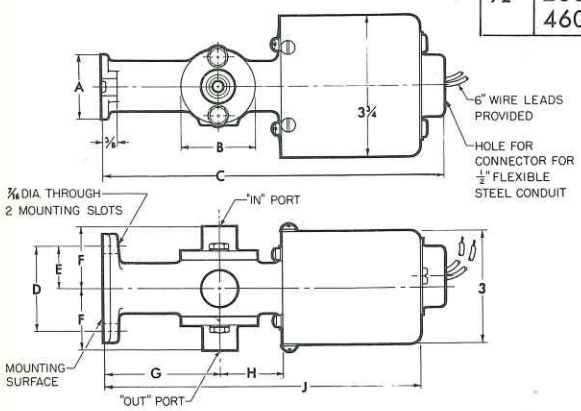


STANDARD A.C.

1750 Series • 2 Position Standard A.C. Solenoid

VALVE CHARACTERISTICS AND ORDERING DATA

Port Size NPT	Volts	Free Air Flow CuFt/Min.	PRESSURE RANGE P.S.I.	FLOW PATTERN AND VALVE NUMBER		LIST PRICE		Approx. Shipping Wt., Lbs.
				Normally Open	Normally Closed	Valve	Solenoid	
1/4"	115 230 460	150	0-250	1751SOAO2A1 1751SOAO2A2 1751SOAO2A4	1751SOAC2A1 1751SOAC2A2 1751SOAC2A4	51.00	13.90	5½
3/8"	115 230 460	350	0-250	1752SOAO2A1 1752SOAO2A2 1752SOAO2A4	1752SOAC2A1 1752SOAC2A2 1752SOAC2A4	56.00	17.40	7½
1/2"	115 230 460	350	0-250	1753SOAO2A1 1753SOAO2A2 1753SOAO2A4	1753SOAC2A1 1753SOAC2A2 1753SOAC2A4	60.00	17.40	7½



DIMENSIONS

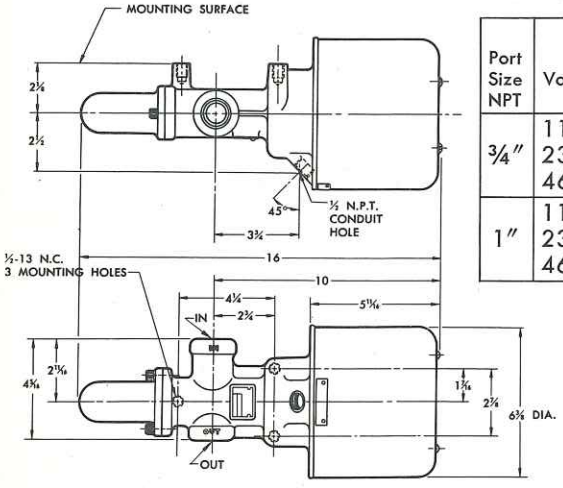
VALVE SIZE	A	B	C	D	E	F	G	H	J
1/4"	2 1/4	2	9 1/16	2 1/4	1 1/8	1 21/32	3 3/32	1 5/8	8 7/16
3/8"	2 1/2	2 1/2	9 13/16	2 5/8	1 5/16	2 3/16	3 1/2	1 31/32	9 3/16
1/2"	2 1/2	2 1/2	9 13/16	2 5/8	1 5/16	2 3/16	3 1/2	1 31/32	9 3/16

STANDARD A.C.

290 Series • 2 Position Standard A.C. Solenoid

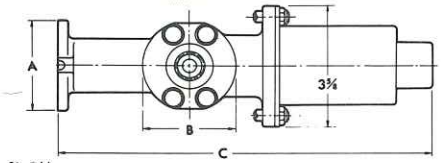
VALVE CHARACTERISTICS AND ORDERING DATA

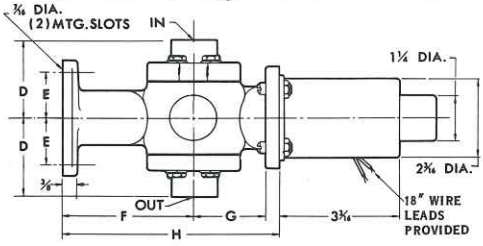
Port Size NPT	Volts	Free Air Flow CuFt/Min.	PRESSURE RANGE P.S.I.	FLOW PATTERN AND VALVE NUMBER		LIST PRICE		Approx. Shipping Wt., Lbs.
				Normally Open	Normally Closed	Valve	Solenoid	
3/4"	115 230 460	1800	0-250	294SOAO2A1 294SOAO2A2 294SOAO2A4	294SOAC2A1 294SOAC2A2 294SOAC2A4	165.60	58.00	28
1"	115 230 460	1800	0-250	295SOAO2A1 295SOAO2A2 295SOAO2A4	295SOAC2A1 295SOAC2A2 295SOAC2A4	165.60	58.00	28



1750 Series • 2 Position Standard D.C. Solenoid

STANDARD D.C.





VALVE CHARACTERISTICS AND ORDERING DATA

Port Size NPT	Volts	Free Air Flow CuFt/Min.	PRESSURE RANGE P.S.I.	FLOW PATTERN AND VALVE NUMBER		LIST PRICE		Approx. Shipping Wt., Lbs.
				Normally Open	Normally Closed	Valve	Solenoid	
¼"	12	150	0-250	1751SOAO2D2	1751SOAC2D2	51.00	45.00	5½
	24			1751SOAO2D3	1751SOAC2D3	51.00	33.60	
	125			1751SOAO2D4	1751SOAC2D4	51.00	38.00	
⅜"	12	350	0-250	1752SOAO2D2	1752SOAC2D2	56.00	45.00	7½
	24			1752SOAO2D3	1752SOAC2D3	56.00	33.60	
	125			1752SOAO2D4	1752SOAC2D4	56.00	38.00	
½"	12	350	0-250	1753SOAO2D2	1753SOAC2D2	60.00	45.00	7½
	24			1753SOAO2D3	1753SOAC2D3	60.00	33.60	
	125			1753SOAO2D4	1753SOAC2D4	60.00	38.00	

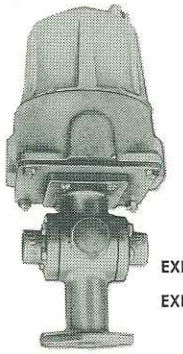
DIMENSIONS

VALVE SIZE	A	B	C	D	E	F	G	H
¼"	2¼	2	9 5/32	1 21/32	1⅛	3 3/32	1⅝	5 3/32
⅜"	2½	2½	9⅞	2 3/16	1 5/16	3½	1 31/32	5 13/16
½"	2½	2½	9⅞	2 3/16	1 5/16	3½	1 31/32	5 13/16

1750 Series • Explosion-Proof A.C. Solenoid

VALVE CHARACTERISTICS AND ORDERING DATA

Port Size NPT	Volts	Free Air Flow CuFt/Min.	PRESSURE RANGE P.S.I.	FLOW PATTERN AND VALVE NUMBER		LIST PRICE		Approx. Shipping Wt., Lbs.
				Normally Open	Normally Closed	Valve	Solenoid	
¼"	115	150	0-250	X1751SOAO2A1	X1751SOAC2A1	51.00	75.00	16
	230			X1751SOAO2A2	X1751SOAC2A2			
	460			X1751SOAO2A4	X1751SOAC2A4			
⅜"	115	350	0-250	X1752SOAO2A1	X1752SOAC2A1	56.00	75.00	17½
	230			X1752SOAO2A2	X1752SOAC2A2			
	460			X1752SOAO2A4	X1752SOAC2A4			
½"	115	350	0-250	X1753SOAO2A1	X1753SOAC2A1	60.00	75.00	17½
	230			X1753SOAO2A2	X1753SOAC2A2			
	460			X1753SOAO2A4	X1753SOAC2A4			



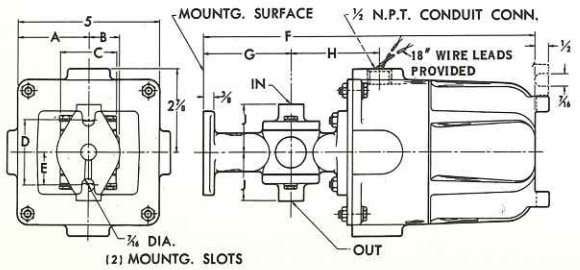
EXPLOSION-PROOF A.C.

EXPLOSION-PROOF D.C.

1750 Series • Explosion-Proof D.C. Solenoid

VALVE CHARACTERISTICS AND ORDERING DATA

Port Size NPT	Volts	Free Air Flow CuFt/Min.	PRESSURE RANGE P.S.I.	FLOW PATTERN AND VALVE NUMBER		LIST PRICE		Approx. Shipping Wt., Lbs.
				Normally Open	Normally Closed	Valve	Solenoid	
¼"	12	150	0-250	X1751SOAO2D2	X1751SOAC2D2	51.00	89.00	14½
	24			X1751SOAO2D3	X1751SOAC2D3	51.00	77.60	
	125			X1751SOAO2D4	X1751SOAC2D4	51.00	82.00	
⅜"	12	350	0-250	X1752SOAO2D2	X1752SOAC2D2	56.00	89.00	16
	24			X1752SOAO2D3	X1752SOAC2D3	56.00	77.60	
	125			X1752SOAO2D4	X1752SOAC2D4	56.00	82.00	
½"	12	350	0-250	X1753SOAO2D2	X1753SOAC2D2	60.00	89.00	16
	24			X1753SOAO2D3	X1753SOAC2D3	60.00	77.60	
	125			X1753SOAO2D4	X1753SOAC2D4	60.00	82.00	

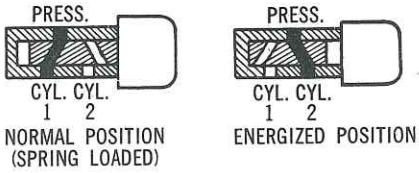


DIMENSIONS (Explosion-Proof A C and Explosion-Proof DC)

VALVE SIZE	A	B	C	D	E	F	G	H	J
¼"	2½	1 3/32	2	2¼	1⅛	1 3 7/16	3 3/32	3⅛	1 21/32
⅜"	2½	1 11/32	2½	2⅝	1 5/16	1 4 3/16	3½	3 7/16	2 3/16
½"	2½	1 11/32	2½	2⅝	1 5/16	1 4 3/16	3½	3 7/16	2 3/16

DIVERTER • DIRECT-SOLENOID • 0 to 250 P.S.I. • "SHEAR-SEAL" VALVES

FLOW PATTERN OF DIVERTER VALVES

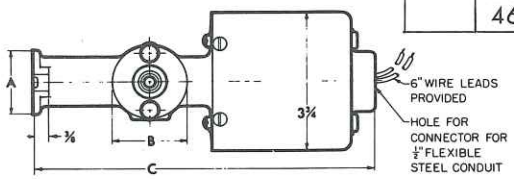


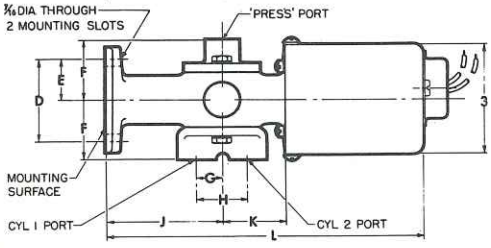
STANDARD A.C.

2660 Series • 2 Position Standard A.C. Solenoid

VALVE CHARACTERISTICS AND ORDERING DATA

Port Size NPT	Volts	Free Air Flow CuFt/Min.	PRESSURE RANGE P.S.I.	VALVE NUMBER	LIST PRICE		Approx. Shipping Wt., Lbs.
					Valve	Solenoid	
1/4"	115 230 460	150	0-250	2661SOAQ2A1 2661SOAQ2A2 2661SOAQ2A4	59.00	13.90	5½
3/8"	115 230 460	350	0-250	2662SOAQ2A1 2662SOAQ2A2 2662SOAQ2A4	66.00	17.40	7½
1/2"	115 230 460	350	0-250	2663SOAQ2A1 2663SOAQ2A2 2663SOAQ2A4	72.60	17.40	7½





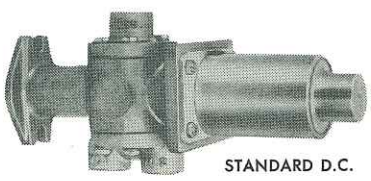
DIMENSIONS

VALVE SIZE	A	B	C	D	E	F	G	H	J	K	L
1/4"	2 1/4	2	9 1/16	2 1/4	1 1/8	1 21/32	1 1/16	1 3/8	3 3/32	1 5/8	8 7/16
3/8"	2 1/2	2 1/2	9 13/16	2 5/8	1 5/16	2 3/16	7/8	1 3/4	3 1/2	1 31/32	9 3/16
1/2"	2 1/2	2 1/2	9 13/16	2 5/8	1 5/16	2 3/16	7/8	1 3/4	3 1/2	1 31/32	9 3/16

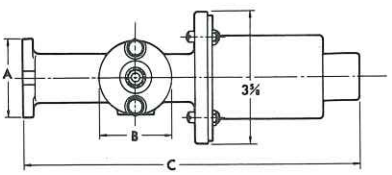
2660 Series • 2 Position Standard D.C. Solenoid

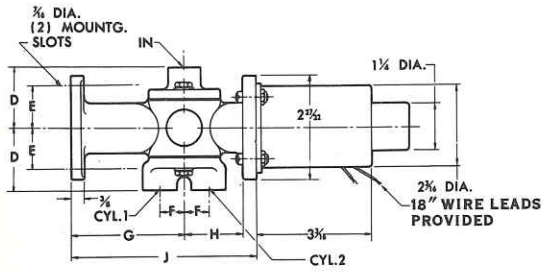
VALVE CHARACTERISTICS AND ORDERING DATA

Port Size NPT	Volts	Free Air Flow CuFt/Min.	PRESSURE RANGE P.S.I.	VALVE NUMBER	LIST PRICE		Approx. Shipping Wt., Lbs.
					Valve	Solenoid	
1/4"	12 24 125	150	0-250	2661SOAQ2D2 2661SOAQ2D3 2661SOAQ2D4	59.00 59.00 59.00	45.00 33.60 38.00	4¾
3/8"	12 24 125	350	0-250	2662SOAQ2D2 2662SOAQ2D3 2662SOAQ2D4	66.00 66.00 66.00	45.00 33.60 38.00	6¼
1/2"	12 24 125	350	0-250	2663SOAQ2D2 2663SOAQ2D3 2663SOAQ2D4	72.60 72.60 72.60	45.00 33.60 38.00	6¼



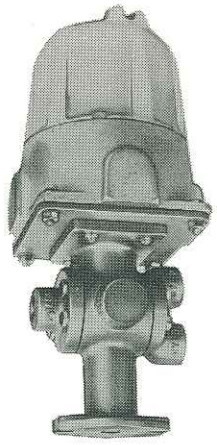
STANDARD D.C.





DIMENSIONS

VALVE SIZE	A	B	C	D	E	F	G	H	J
1/4"	2 1/4	2	9 5/32	1 21/32	1 1/8	1 1/16	3 3/32	1 5/8	5 3/32
3/8"	2 1/2	2 1/2	9 7/8	2 3/16	1 5/16	7/8	3 1/2	1 31/32	5 13/16
1/2"	2 1/2	2 1/2	9 7/8	2 3/16	1 5/16	7/8	3 1/2	1 31/32	5 13/16

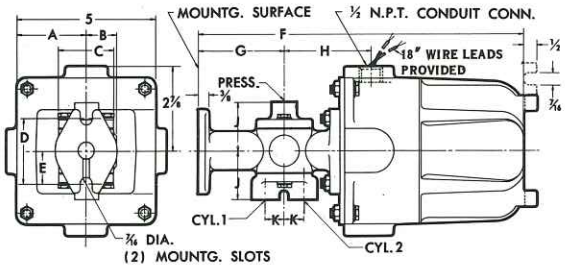


EXPLOSION-PROOF A.C.

2660 Series • Explosion-Proof A.C. Solenoid

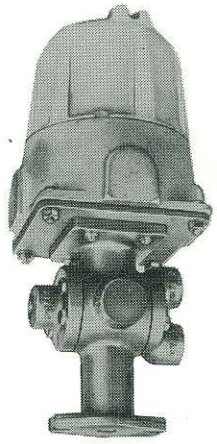
VALVE CHARACTERISTICS AND ORDERING DATA

Port Size NPT	Volts	Free Air Flow CuFt/Min.	PRESSURE RANGE P.S.I.	VALVE NUMBER	LIST PRICE		Approx. Shipping Wt., Lbs.
					Valve	Solenoid	
1/4"	115 230 460	150	0-250	X2661SOAQ2A1 X2661SOAQ2A2 X2661SOAQ2A4	59.00	75.00	16
3/4"	115 230 460	350	0-250	X2662SOAQ2A1 X2662SOAQ2A2 X2662SOAQ2A4	66.00	75.00	17 1/2
1/2"	115 230 460	350	0-250	X2663SOAQ2A1 X2663SOAQ2A2 X2663SOAQ2A4	72.60	75.00	17 1/2



DIMENSIONS

VALVE SIZE	A	B	C	D	E	F	G	H	J	K
1/4"	2 1/2	1 3/32	2	2 1/4	1 1/8	1 3 7/16	3 3/32	3 1/8	1 21/32	1 1/16
3/8"	2 1/2	1 11/32	2 1/2	2 5/8	1 5/16	1 4 3/16	3 1/2	3 7/16	2 3/16	7/8
1/2"	2 1/2	1 11/32	2 1/2	2 5/8	1 5/16	1 4 3/16	3 1/2	3 7/16	2 3/16	7/8

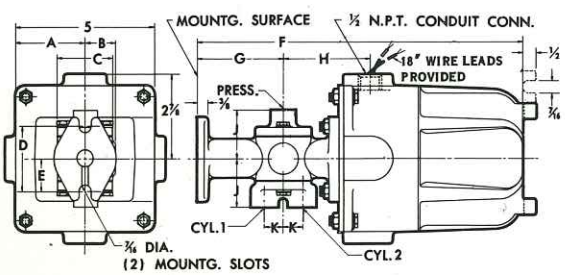


EXPLOSION-PROOF D.C.

2660 Series • Explosion-Proof D.C. Solenoid

VALVE CHARACTERISTICS AND ORDERING DATA

Port Size NPT	Volts	Free Air Flow CuFt/Min.	PRESSURE RANGE P.S.I.	VALVE NUMBER	LIST PRICE		Approx. Shipping Wt., Lbs.
					Valve	Solenoid	
1/4"	12 24 125	150	0-250	X2661SOAQ2D2 X2661SOAQ2D3 X2661SOAQ2D4	59.00 59.00 59.00	89.00 77.60 82.00	14 1/2
3/8"	12 24 125	350	0-250	X2662SOAQ2D2 X2662SOAQ2D3 X2662SOAQ2D4	66.00 66.00 66.00	89.00 77.60 82.00	16
1/2"	12 24 125	350	0-250	X2663SOAQ2D2 X2663SOAQ2D3 X2663SOAQ2D4	72.60 72.60 72.60	89.00 77.60 82.00	16



DIMENSIONS

VALVE SIZE	A	B	C	D	E	F	G	H	J	K
1/4"	2 1/2	1 3/32	2	2 1/4	1 1/8	1 3 7/16	3 3/32	3 1/8	1 21/32	1 1/16
3/8"	2 1/2	1 11/32	2 1/2	2 5/8	1 5/16	1 4 3/16	3 1/2	3 7/16	2 3/16	7/8
1/2"	2 1/2	1 11/32	2 1/2	2 5/8	1 5/16	1 4 3/16	3 1/2	3 7/16	2 3/16	7/8

GENERALIZED SERVICE DATA ON SOLENOIDS USED ON BARKSDALE DIRECT ACTING VALVES

TYPES OF SOLENOIDS WE USE

On our 250 p.s.i. line of direct acting solenoid valves in the ¼", ⅜", and ½" sizes we currently use West Coast Solenoids. The reason we use this make of solenoid on these valves is that over a period of years we have worked closely with this manufacturer and jointly have developed what we consider to be the finest solenoid that we can buy to fit the specific load conditions of our 250 p.s.i. line. It is a heavy duty solenoid. It is rated for continuous duty. To achieve this continuous duty rating the wire is treated with special heat resistant lacquer and after the lacquering process it is glass wound to further insure its resistance to high temperature. On our 250 p.s.i. ¾" and 1" valves we use General Electric Solenoids which we have been buying for the past eight years. It has had an excellent service history on our valves, and we are therefore considering no change.

TEMPERATURE

A solenoid continuously energized increases in temperature until it reaches what is called the "leveling out temperature." This temperature is reached when the heat coming into the coil is equalized by the heat being dissipated into the surrounding atmosphere. We have received letters expressing concern that our solenoid seemed to be overly hot or was "too hot to touch." This is nothing to be disturbed about unless there is some other malfunction observed, because West Coast solenoids do not level out in temperature until they reach approximately 250°, which is above the boiling point of water. This is nothing peculiar to this make of solenoid, but rather it is typical of heavy duty solenoids with glass wound coils. The glass winding will resist high temperature and is an excellent insulation. It also has the characteristic of holding the heat in the coil and not dissipating temperature as rapidly as do other less expensive insulating materials.

CYCLING RATE

Direct acting solenoid valves cannot cycle at rates comparable to pilot operated valves because of the length of the stroke of the solenoid. On a direct acting solenoid without any levers, the stroke of the slide and solenoid are identical. The maximum cycling rate we recommend on any of our direct acting solenoid valves is 40 cycles a minute. If the cycling rate is to be greater than this the factory should be consulted so that all operating conditions can be evaluated by our engineering department before a recommendation is made. However 60 cycles a minute is an absolute maximum.

SERVICE LIFE OF DIRECT ACTING SOLENOID VALVES

A direct acting solenoid valve can reasonably be expected to operate at least one million cycles or one year without maintenance, whichever is less. We have had hundreds of valves that have given a longer service life than this and we have had others that have given less. The reasons for the differences are the operating conditions to which the valve is subjected.

CONSTANT DUTY on applications where the solenoid is energized continuously will, over a period of time, cause any insulation on a coil to slowly break down. This is true of all direct acting solenoid valves.

STANDARD WARRANTY #24a

Barksdale Valves warrants devices bearing its nameplate, when not misused or neglected, to be free from defects in workmanship or material. The Company's obligation under this warranty being limited to repairing or replacing at its factory any device or part thereof which shall within one year after delivery to the original purchaser, be returned to the factory, transportation charges prepaid, and which on examination shall reveal to have been thus defective. The Company assumes no liability for consequential damages of any kind; the purchaser by acceptance of this equipment will assume all liability for the consequences of its use or misuse by the purchaser, his employees or others. A defect in the meaning of this warranty in any part of said equipment shall not, when such part is capable of being repaired or replaced, operate to condemn such equipment. This warranty being expressly in lieu of other warranties, obligations or liabilities, expressed or implied by the Company or its representatives. All statutory or implied warranties, other than title, are hereby expressly negatived and excluded.

No agent, servant, employee or representative of Barksdale Valves is authorized by said company to make any statement, assertion or representation in the nature of a warranty, opinion, statement of fact or otherwise, orally or in writing, concerning the subject matter sold or ordered.

QUANTITY DISCOUNT POLICY FOR SINGLE SHIPMENTS

(Applies on standard catalog items only)

Each quantity discount other than on a scheduled order will be based on the total number of units ordered simultaneously for delivery in one lot.

QUANTITY DISCOUNT POLICY FOR SCHEDULED PURCHASE ORDER

(Applies on standard catalog items only)

A. Customer places order for anticipated requirements for the following twelve months, or less.

B. No one scheduled delivery can be less than ten units or $150.00 — whichever represents the lesser billing.

C. In case of cancellation after initial shipments, quantity discount will be adjusted based on quantity actually purchased, providing order is for standard catalog items.

D. Any increase on a scheduled order after initial shipment has been made will be treated as a separate order and quantity discount figured accordingly. Quantity discount for an increase on a scheduled order prior to initial shipment will be figured on the total quantity on the revised order.

NOTE: All scheduled purchase orders are subject to any authorized price increase on undelivered balance.

GENERAL QUANTITY DISCOUNT SCHEDULE

(Applies on all standard catalog items)

Quantity	Discount
1 to 5	Net
6 to 49	5%
50 & UP	Consult factory for special discounts which may apply.

(Applies on 5000 series valves only)

Quantity	Discount
1 to 9	Net
10 to 49	10%
50 & UP	20%

Consult factory for OEM Discount.

SPARE PARTS & REWORK DISCOUNT SCHEDULE

A. Discounts

1. User Accounts ..... Net
2. O. E. M. Accounts
   a. Spare parts orders for less than $100.00 ..... Net
   b. Spare parts orders for over $100.00 ..... 20%

Exceptions: No discounts will be allowed on orders for solenoids for Barksdale units or parts thereof.

B. Minimum Orders

There will be a minimum billing of $5.00 on all spare parts orders between $2.50 and $5.00 list. Any order amounting to $2.49 or less will be furnished gratis without paperwork.

C. Repair or Rework Orders

No discounts will be allowed on repair or rework orders.

NOTE: Above discount policies are subject to change without notice.

RETURNED MERCHANDISE POLICY

A. Returned goods will not be accepted for credit without prior written authorization from the factory.

B. The following handling fee will be charged on all *non-defective* standard catalog items accepted for credit:

$10.00 minimum charge for any single purchase order

Prior to 90 days after delivery	10% handling charge
Three to six months after delivery	25% handling charge
Six months to one year after delivery	50% handling charge
Over one year after delivery	Not returnable

C. Non-catalog items cannot be accepted for credit.

E. All transportation charges must be prepaid by the customer.

CREDIT POLICY

Barksdale Valves reserves the right to approve or disapprove the credit of any customer. For all those customers whose credit has been approved, our terms are ½% if invoices dated from 1st of month to the 15th are paid by the 25th of that month, and invoices dated from 15th of month to last day of the month are paid by the 10th of the following month. For those customers whose credit is not approved all shipments will be made C.O.D. until the credit is established.

Any customer who becomes 30 days delinquent will be sent a notice of delinquency and at the end of 45 days' delinquency will be sent a second notice advising him that he is now on a C.O.D. basis until his account is paid in full, at which time the account will be re-evaluated before extension of further credit.

POLICY FOR REQUESTING SPECIAL VALVES

Barksdale Valves will undertake no action, engineering investigation, or otherwise on a special unit until a "Special Valve Request" form has been received, giving all the pertinent engineering as well as functional and competitive information required for evaluation.

A. TROUBLE: HIGH HANDLE LOAD

Possible Causes	Remedy
1. Restriction "return" port or pressure on the return port due to valve being installed in system incorrectly.	1. Remove restriction or install valve properly.
2. Galling between shaft & housing (occurs only when shaft actuated by some mechanical linkage).	2. Replace shaft and/or housing.
3. Dirt under thrust washer which lifts and cocks rotor.	3. Disassemble and clean valve.
4. Damaged detent plate.	4. Replace.
5. Damaged bearing.	5. Replace.
6. Pressure in excess of valve rating.	6. Put a relief valve or other pressure regulating device in the system.
7. Lip worn off "Shear-Seal" which would increase friction load.	7. Replace "Shear-Seal." As an emergency measure the "Shear-Seal" can be chamfered to reduce the area of sealing face.
8. Galling between the "Shear-Seal" and rotor.	8. Replace.

B. TROUBLE: EXTERNAL LEAKAGE AROUND SHAFT

1. Worn shaft 'O' ring.	1. Replace shaft 'O' ring.
2. Enlarged shaft hole caused by side load on shaft (occurs only when shaft actuated by some mechanical linkage).	2. Replace housing.

C. TROUBLE: INTERNAL LEAKAGE AROUND "SHEAR-SEALS"

1. Worn "Shear-Seal" 'O' ring.	1. Replace "Shear-Seal" 'O' ring.

D. TROUBLE: LEAKAGE ACROSS FACE OF "SHEAR-SEALS"

1. Scratch or other damage to lip of "Shear-Seal."	1. Either replace "Shear-Seal" or relap.
2. Scratch or other damage on rotor.	2. Replace or relap rotor.
3. Incorrect positioning of rotor in relation to "Shear-Seal." This in turn can be caused by worn shaft pins or worn stops.	3. Replace parts.
4. Extreme wear on face of "Shear-Seal" which will normally occur only after millions of cycles. Such wear reduces spring tension in "Shear-Seal" and may thus cause leakage.	4. Replace "Shear-Seal." As a temporary measure a small washer or shim can be put behind the "Shear-Seal" spring to compensate for wear.
5. "Shear-Seal" spring fails by breaking or taking a permanent set which in turn may allow fluid to pass between "Shear-Seal" and rotor.	5. Replace spring. For temporary service a rubber washer can be put behind the "Shear-Seal." This will act as a spring until part can be installed.

E. TROUBLE: EXTERNAL LEAKAGE AROUND PORTS

1. Scratches or other physical damage to the threads.	1. If thread compound fails to effect a solder so that when the pipe is screwed back into the valve it will in effect re-cut the threads. Use Litharge and Glycerine for a thread seal any time the piping is changed.

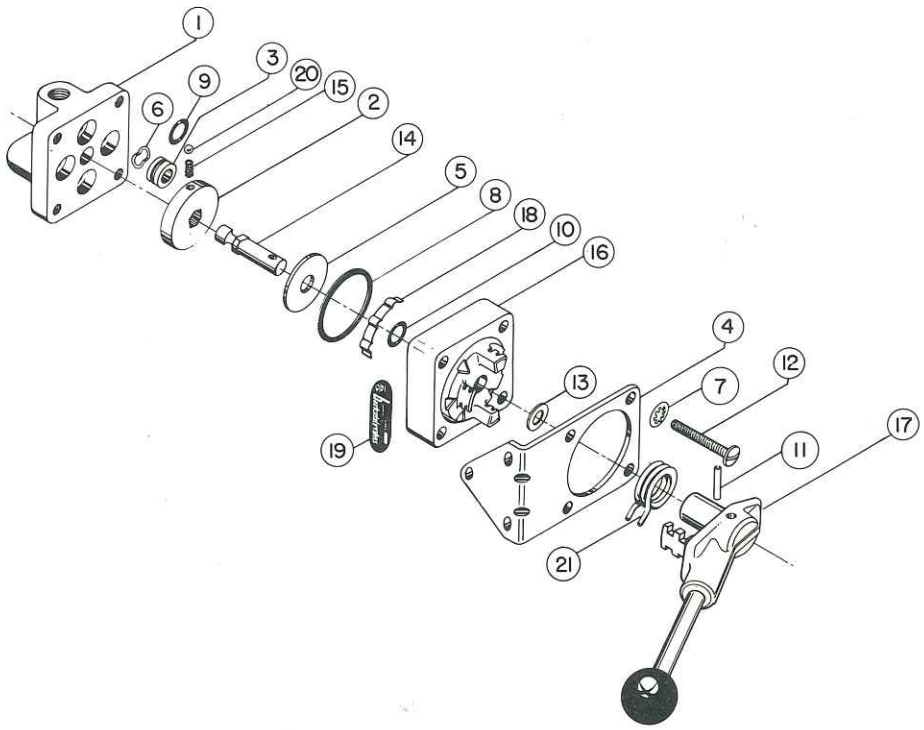
F. TROUBLE: EXTERNAL LEAKAGE BETWEEN BODY AND HOUSING

1. Improperly installed body 'O' ring.	1. Replace body 'O' ring and install properly.

MAINTENANCE

1. Disassemble and inspect. Replace or rework damaged or worn parts and 'O' rings. This service should be performed every two years or every 2,000,000 cycles, whichever occurs first.
2. At the first sign of excessive internal leakage the valve should be disassembled and the source of leakage repaired.
3. Incorrect positioning of rotor in relation to "Shear-Seal".

SPARE PARTS AND PRICES FOR MANUAL 4-WAY VALVES



Models: 5001-M, 5001-MC, 5001-MR
5002-M, 5002-MC, 5002-MR

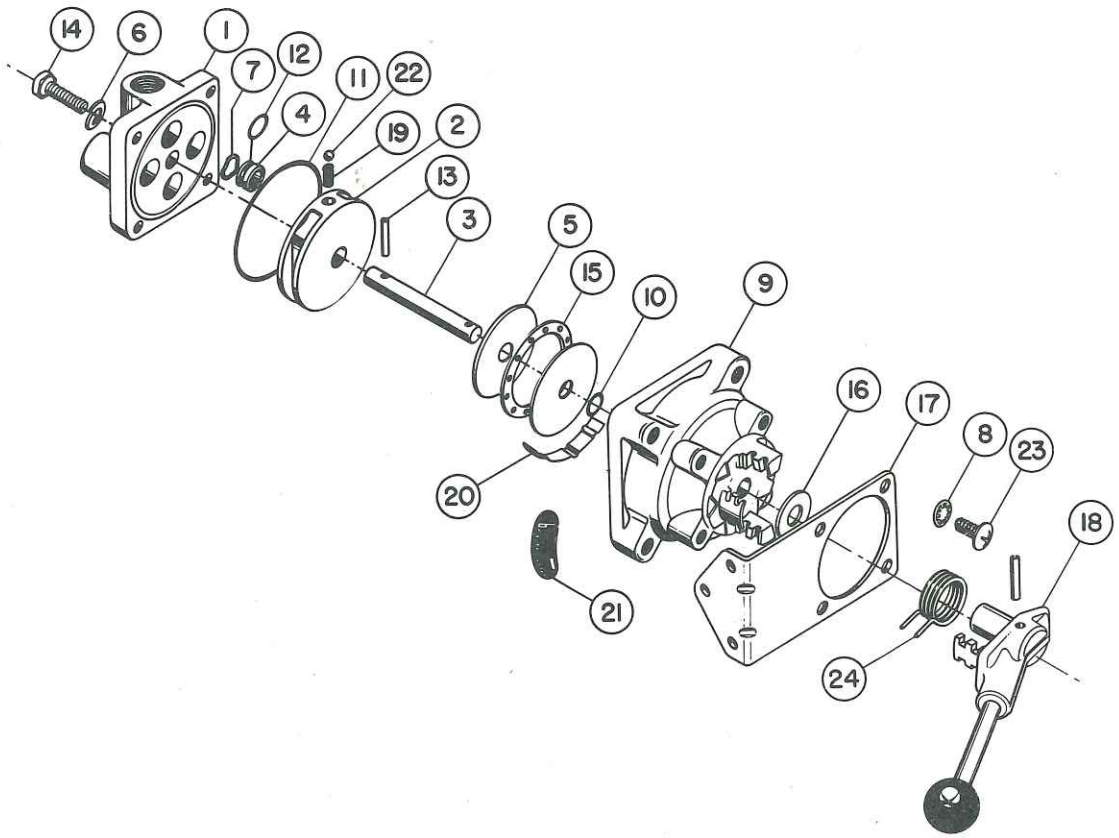
Part Code	Description	No. Req'd	Part Number	List Price
	Parts Common to All Valve Numbers			
1	Body*(#5001M-MC-MR)	1	201134-5	3.40
1	Body*(#5002M-MC-MR)	1	201136-5	3.40
2	Rotor	1	20389	4.00
3	Shear Seal	4	21465	.50
5	Thrust Washer	1	22413-4	.20
6	Washer—Shear Seal Spring	4	22507-8	.20
7	Lock Washer—Body Screw	4	22517-5	.10
8	Gasket—Body	1	23324	.10
9	"O" Ring—Shear Seal	4	25101-7	.20
10	"O" Ring—Shaft	1	25101-10	.20
11	Pin—Handle	1	25335-7-16	.10
12	Screw—Body	4	5/16-18NCx1-1/2"	.10
13	Washer	1	AN960-816L	.10
	Additional Parts for Valve No. 2801-M and 2802-M			
14	Shaft	1	20442-1	.60
15	Spring—Detent	1	21374	.10
16	Housing	1	22746-5	1.60
17	Handle Assembly	1	32915	2.30
18	Detent Plate	1	23029	.10
19	Nameplate	1	25012-5001M	.20
19	Nameplate	1	25012-5002M	.20
20	Ball—Detent	1	25501-5	.10
	Additional Parts for Valve No. 2801-MC and 2802-MC			
14	Shaft	1	20442-2	1.00
21	Spring—Centering	1	21367	.40
16	Housing	1	22744-5	2.00
17	Handle Assembly	1	32918	2.30
19	Nameplate	1	25012-5001MC	.20
19	Nameplate	1	25012-5002MC	.20
	Additional Parts for Valve No. 2801-MR and 2802-MR			
14	Shaft	1	20442-2	1.00
21	Spring—Return	1	21368	.90
16	Housing	1	22744-1-5	2.70
17	Handle Assembly	1	32918	2.30
19	Nameplate	1	25012-5001MR	.20
19	Nameplate	1	25012-5002MR	.20

Models: 2801-M, 2801-MC, 2801-MR
2802-M, 2802-MC, 2802-MR

Part Code	Description	No. Req'd	Part Number	List Price
	Parts Common to All Valve Numbers			
1	Body*(#2801M-MC-MR)	1	201134	3.90
1	Body*(#2802M-MC-MR)	1	201136	3.90
2	Rotor	1	20389	4.00
3	Shear Seal	4	21465	.50
4	Bracket—Mounting	1	21822	1.00
5	Thrust Washer	1	22413-4	.20
6	Washer—Shear Seal Spring	4	22507-8	.20
7	Lock Washer—Body Screw	4	22517-5	.10
8	Gasket—Body	1	23324	.10
9	"O" Ring—Shear Seal	4	25101-7	.20
10	"O" Ring—Shaft	1	25101-10	.20
11	Pin—Handle	1	25335-7-16	.10
12	Screw—Body	4	5/16-18NCx1-1/2"	.10
13	Washer	1	AN960-816L	.10
	Additional Parts for Valve No. 2801-M and 2802-M			
14	Shaft	1	20442-1	.60
15	Spring—Detent	1	21374	.10
16	Housing	1	22746	2.00
17	Handle Assembly	1	32915	2.30
18	Detent Plate	1	23029	.10
19	Nameplate	1	25012-2801M	.20
19	Nameplate	1	25012-2802M	.20
20	Ball—Detent	1	25501-5	.10
	Additional Parts for Valve No. 2801-MC and 2802-MC			
14	Shaft	1	20442-2	1.00
21	Spring—Centering	1	21367	.40
16	Housing	1	22744	2.40
17	Handle Assembly	1	32918	2.30
19	Nameplate	1	25012-2801MC	.20
19	Nameplate	1	25012-2802MC	.20
	Additional Parts for Valve No. 2801-MR and 2802-MR			
14	Shaft	1	20442-2	1.00
21	Spring—Return	1	21368	.90
16	Housing	1	22744-1	3.10
17	Handle Assembly	1	32918	2.30
19	Nameplate	1	25012-2801MR	.20
19	Nameplate	1	25012-2802MR	.20

*For 1/4 and 3/8" tube add (AND) to number. Price on request.

SPARE PARTS AND PRICES FOR MANUAL 4-WAY VALVES



Models: 5003-M, 5003-MC and 5003-MR

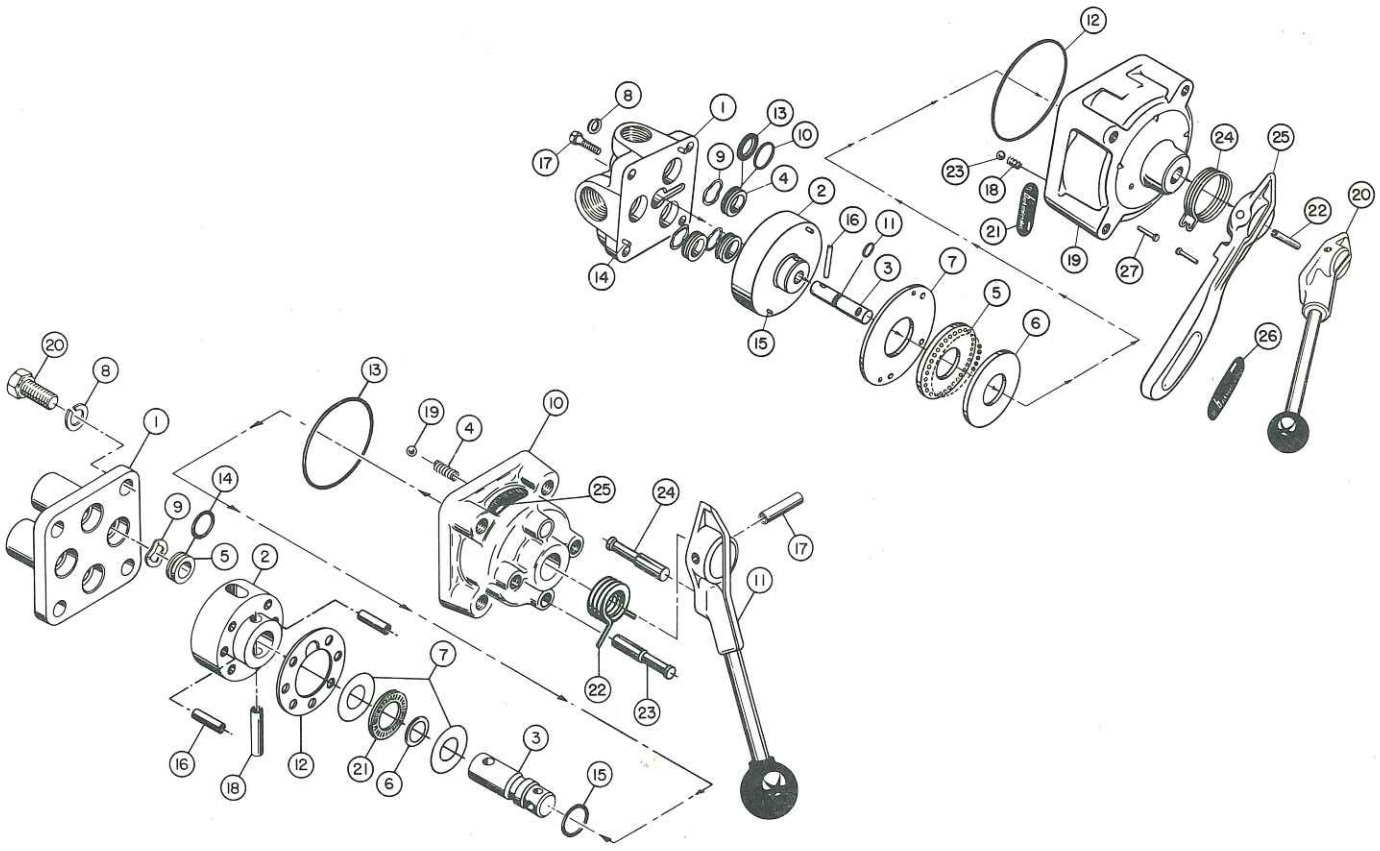
Code No.	Description	No. Req'd	Part Number for 5003 Valve	List Price
	Parts Common to All Valve Numbers			
1	Body*	1	201153-5	8.50
2	Rotor	1	203104	9.20
3	Shaft	1	20464-3	1.20
4	Shear Seal	3	21473	.80
5	Thrust Washer—Bearing	2	22413-6	.30
6	Lock Washer—Body Screw	4	22502-6	.10
7	Spring—Washer—Shear Seal	3	22507-13	.20
9	Housing	1	22755-5	5.30
10	"O" Ring—Shaft	1	25101-10	.20
11	"O" Ring—Body	1	25120-14	.50
12	"O" Ring—Shear Seal	3	25141-17	.30
13	Pin—Handle and Rotor	2	25335-7-16	.10
16	Washer	1	AN960-816L	.10
14	Screw—Body	4	25618-6-20	.10
15	Bearing (Nice)	1	R5208	.90
18	Handle Assembly	1	32918	1.60
	Additional Parts for Valve No. 5003-M			
19	Spring—Detent	1	21374	.10
20	Plate—Detent	1	23030	.50
22	Ball—Detent	1	25501-5	.10
21	Name Plate	1	25012-5003M	.10
	Additional Parts for Valve No. 5003-MC			
24	Spring—Centering	1	21367	.40
21	Name Plate	1	25012-5003MC	.20
	Additional Parts for Valve No. 5003-MR			
24	Spring—Return	1	21368	.90
21	Name Plate	1	25012-5003MR	.20

Models: 2803-M, 2803-MC and 2803-MR

Code No.	Description	No. Req'd	Part Number for 2803 Valve	List Price
	Parts Common to All Valve Numbers			
1	Body*	1	201153	8.90
2	Rotor	1	203104	9.20
3	Shaft	1	20464-3	1.20
4	Shear Seal	3	21473	.80
5	Thrust Washer—Bearing	2	22413-6	.30
6	Lock Washer—Body Screw	4	22502-6	.10
7	Spring—Washer—Shear Seal	3	22507-13	.20
8	Lock Washer—Bracket Screw	4	22517-5	.10
9	Housing	1	22755	6.00
10	"O" Ring—Shaft	1	25101-10	.20
11	"O" Ring—Body	1	25120-14	.50
12	"O" Ring—Shear Seal	3	25141-17	.30
13	Pin—Handle and Rotor	2	25335-7-16	.10
14	Screw—Body	4	25618-6-20	.10
15	Bearing (Nice)	1	R5208	.90
16	Washer	1	AN960-816L	.10
17	Bracket—Mounting	1	21822-1	1.40
18	Handle Assembly	1	32918	1.60
	Additional Parts for Valve No. 2803-M			
19	Spring—Detent	1	21374	.10
20	Plate—Detent	1	23030	.50
21	Nameplate	1	25012-2803M	.30
22	Ball—Detent	1	25501-5	.10
23	Screw—Bracket (Rnd. Hd. Mach.)	4	5/16-18x1/2" Lg.	.20
	Additional Parts for Valve No. 2803-MC			
24	Spring—Centering	1	21367	.40
21	Nameplate	1	25012-2803MC	.30
23	Screw—Bracket (Rnd. Hd. Mach.)	4	5/16-18x1/2" Lg.	.20
	Additional Parts for Valve No. 2803-MR			
24	Spring—Return	1	21368	.90
21	Nameplate	1	25012-2803MR	.20
23	Screw—Bracket (Hd. Rnd. Mach.)	4	5/16-18x1/2" Lg.	.20

*For 1/2" tube add (AND) to number. Price on request.

SPARE PARTS AND PRICES FOR MANUAL 4-WAY VALVES



Models: 2804-M, 2804-MC, 2805-M and 2805-MC

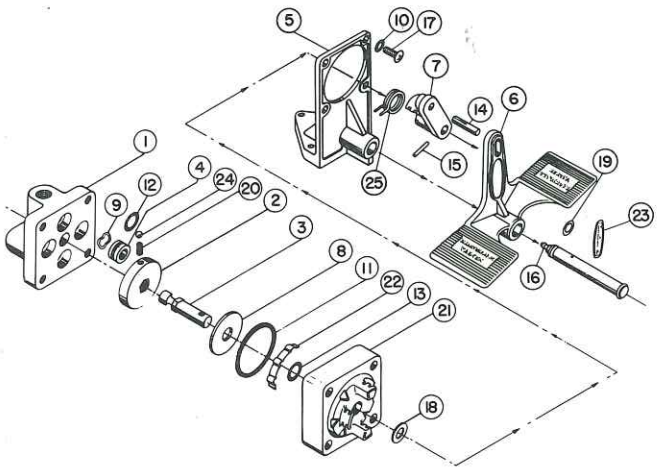
Code No.	Description	No. Req'd	Part Number	List Price
	Parts Common to All Valve Numbers			
1	Body* (#2804-M-MC)	1	201119	24.20
1	Body* (#2805-M-MC)	1	201120	24.20
2	Rotor	1	20355	20.60
5	Shear Seal	3	21436	1.40
6	Spacer—Bearing	1	21727	.60
7	Thrust Washer	2	22413-3	.50
8	Lockwasher—Body Screw	4	22502-10	.10
9	Washer—Shear Seal Spring	3	22507-2	.20
10	Housing	1	22726	14.70
13	"O" Ring—Body	1	25120-20	.90
14	"O" Ring—Shear Seal	3	25101-14	.30
15	"O" Ring—Shaft	1	25101-13	.30
16	Pin—Stop	2	25335-8-10	.10
17	Pin—Handle	1	25335-10-22	.10
18	Pin—Rotor	1	25335-12-36	.20
20	Screw—Body	4	25618-10-24	.50
21	Thrust Bearing(Torrington)	1	NTA 2840	1.30
	Additional Parts for Valves No. 2804-M and 2805-M			
3	Shaft	1	20421-1	4.20
4	Spring—Detent	1	21339	.30
11	Handle Assembly	1	32922-1	5.40
12	Plate—Detent	1	23040	.90
19	Ball—Detent	1	25501-7	.20
25	[illegible]me Plate	1	25012-2804M	.10
25	Na[illegible] Plate	1	25012-2805M	.10
	Additional Parts for Valves No. 2804-MC and 2805-MC			
3	Shaft	1	20421-2	7.70
22	Spring—Centering	1	21376	3.40
11	Handle—Assembly	1	32922-1MC	5.40
23	Pin—Spring (Housing)	1	25361-32	.40
24	Pin—Spring (Handle)	1	25361-28	.40
25	Name Plate	1	25012-2804MC	.10
25	Name Plate	1	25012-2805MC	.10

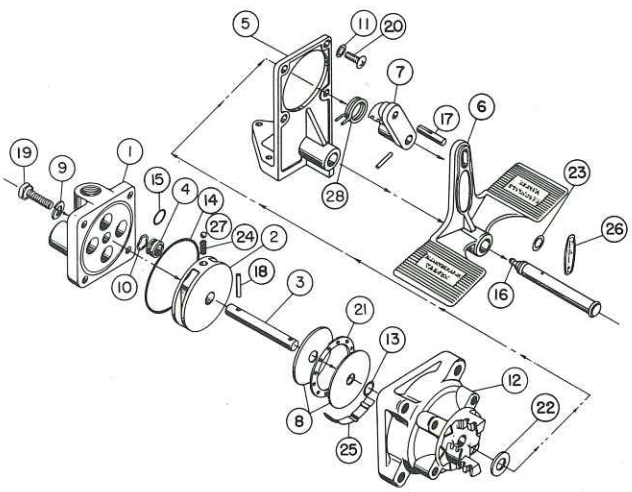
Models: 2807-M, 2807-MC and 2807-MR

Part Code	Description	No. Req'd	Part Number	List Price
	Parts Common to All Valve Numbers			
1	Body*	1	201160	43.40
2	Rotor	1	203108	30.20
3	Shaft	1	20421-1	4.20
4	Shear Seal	3	21407	3.00
5	Retainer Assembly	1	31502	9.00
6	Thrust Washer	1	22413-7	.80
7	Thrust Washer (Detent Plate)	1	22420	1.40
8	Washer—Lock-Body Screw	4	22502-10	.10
9	Washer—Shear Seal Spring	3	22507-3	.50
10	"O" Ring—Shear Seal	3	25101-24	.40
11	"O" Ring—Shaft	1	25101-13	.30
12	"O" Ring—Housing	1	25120-29	1.20
13	Back-Up Ring—Shear Seal	3	25201-24	.40
14	Pin—Dowel	2	25329-8	.30
15	Pin—Stop	2	25335-8-12	.10
16	Pin—Rotor	1	25335-12-28	.50
17	Screw—Body	4	25618-10-28	.30
	Additional Parts for 2807-M			
18	Spring—Detent	1	21307	.10
19	Housing	1	22756	23.10
20	Handle Assembly	1	32922-1	7.30
21	Nameplate	1	25012-2807M	.30
22	Pin—Handle	1	25335-10-22	.50
23	Ball—Detent	1	25501-6	.10
	Additional Parts for 2807-MC			
24	Spring—Centering	1	21379	4.60
19	Housing	1	22758	24.00
25	Handle	1	22939	7.30
26	Nameplate	1	25012-2807MC	.30
22	Pin—Handle	1	25335-10-32	.50
27	Pin—Spring	2	25343	.60
	Additional Parts for 2807-MR			
24	Spring—Return	1	21379	4.60
27	Pin—Spring	2	25343	.60
19	Housing	1	22758	24.00
25	Handle	1	22939	7.30
26	Nameplate	1	25012-2807MR	.30
22	Pin—Handle	1	25335-10-32	.50

*For 3/4, 1 and 1 1/2" tube add (AND) to number. Price on request.

SPARE PARTS AND PRICES FOR FOOT OPERATED 4-WAY VALVES





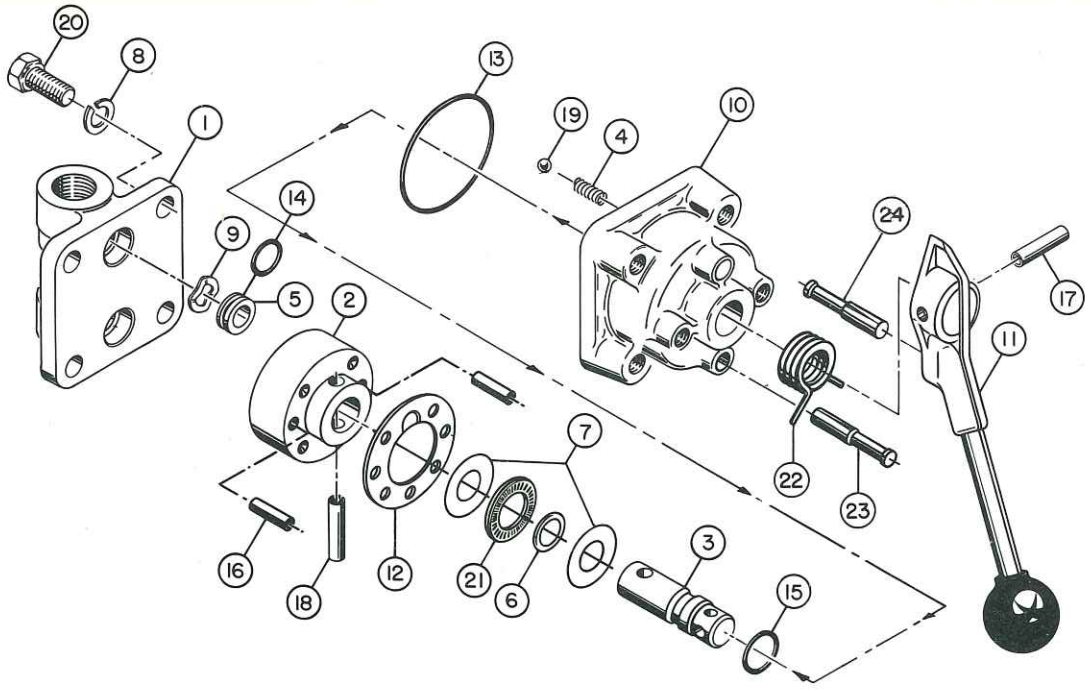
Models: 2801-F, 2801-FC, 2801-FR
2802-F, 2802-FC, 2802-FR

Part Code	Description	No. Req'd	Part Number	List Price
	Parts Common to All Valve Numbers			
1	Body*(2801F-FC-FR)	1	201134	3.90
1	Body*(2802F-FC-FR)	1	201136	4.10
2	Rotor	1	20389	4.00
3	Shaft	1	20442-2	1.00
4	Shear Seal	4	21465	.50
5	Bracket—Mounting	1	21823	1.00
6	Treadle	1	21904	4.00
7	Link	1	22001	1.50
8	Thrust Washer	1	22413-4	.20
9	Washer—Shear Seal Spring	4	22507-8	.20
10	Lock Washer—Body Screw	4	22517-5	.10
11	Gasket—Body	1	23324	.10
12	"O" Ring—Shear Seal	4	25101-7	.20
13	"O" Ring—Shaft	1	25101-10	.20
14	Pin—Link	1	25331-20	.20
15	Pin	1	25335-7-16	.10
16	Pin—Treadle	1	25341	1.30
17	Screw—Body	4	5/16-18NCx1-1/2"	.10
18	Washer	1	AN960-816L	.10
19	Plasti-Ring (Shakeproof)	2	1/2" Size	.10
	Additional Parts for Valve No. 2801-F and 2802-F			
20	Spring—Detent	1	21374	.20
21	Housing	1	22744	2.40
22	Detent Plate	1	23029	.10
23	Nameplate	1	25012-2801F	.20
23	Nameplate	1	25012-2802F	.20
24	Ball—Detent	1	25501-5	.10
	Additional Parts for Valve No. 2801-FC and 2802-FC			
25	Spring—Centering	1	21367	.40
21	Housing	1	22744	2.40
23	Nameplate	1	25012-2801FC	.20
23	Nameplate	1	25012-2802FC	.20
	Additional Parts for Valve No. 2801-FR and 2802-FR			
25	Spring—Return	1	21368	.90
21	Housing	1	22744-1	3.10
23	Nameplate	1	25012-2801FR	.20
23	Nameplate	1	25012-2802FR	.20

Models: 2803-F, 2803-FC and 2803-FR

Code No.	Description	No. Req'd	Part Number	List Price
	Parts Common to All Valve Numbers			
1	Body*	1	201153	8.90
2	Rotor	1	203104	9.20
3	Shaft	1	20464-3	1.20
4	Shear Seal	3	21473	.80
5	Bracket—Mounting	1	21823	1.90
6	Treadle	1	21904	3.50
7	Link	1	22001	1.50
8	Thrust Washer—Bearing	2	22413-6	.30
9	Lock Washer—Body Screw	4	22502-6	.10
10	Spring—Washer—Shear Seal	3	22507-13	.20
11	Lock Washer—Bracket Screw	4	22517-5	.10
12	Housing	1	22755	7.70
13	"O" Ring—Shaft	1	25101-10	.20
14	"O" Ring—Body	1	25120-14	.50
15	"O" Ring—Shear Seal	3	25141-17	.30
16	Pin—Treadle	1	25341	1.30
17	Pin—Link (Type 4 Groov-Pin)	1	25331-20	.20
18	Pin—Handle and Rotor	2	25335-7-16	.10
19	Screw—Body	4	25618-6-20	.10
20	Screw—Bracket (Rnd. Hd. Mach.)	4	5/16-18x3/4" Lg.	.30
21	Bearing (Nice)	1	R5208	.90
22	Washer	1	AN960-816L	.10
23	Plasti-Ring (Shakeproof)	2	1/2" Size	.10
	Additional Parts for Valve No. 2803-F			
24	Spring—Detent	1	21374	.10
25	Plate—Detent	1	23030	.50
26	Nameplate	1	25012-2803F	.10
27	Ball—Detent	1	25501-5	.10
	Additional Parts for Valve No. 2803-FC			
28	Spring—Centering	1	21367	.40
26	Nameplate	1	25012-2803FC	.30
	Additional Parts for Valve No. 2803-FR			
28	Spring—Return	1	21368	.90
26	Nameplate	1	25012-2803FR	.30

*For 1/4, 3/8, 1/2" tube add (AND) to Numbers. Price on request.



SPARE PARTS AND PRICES FOR MANUAL SHUT-OFF VALVES

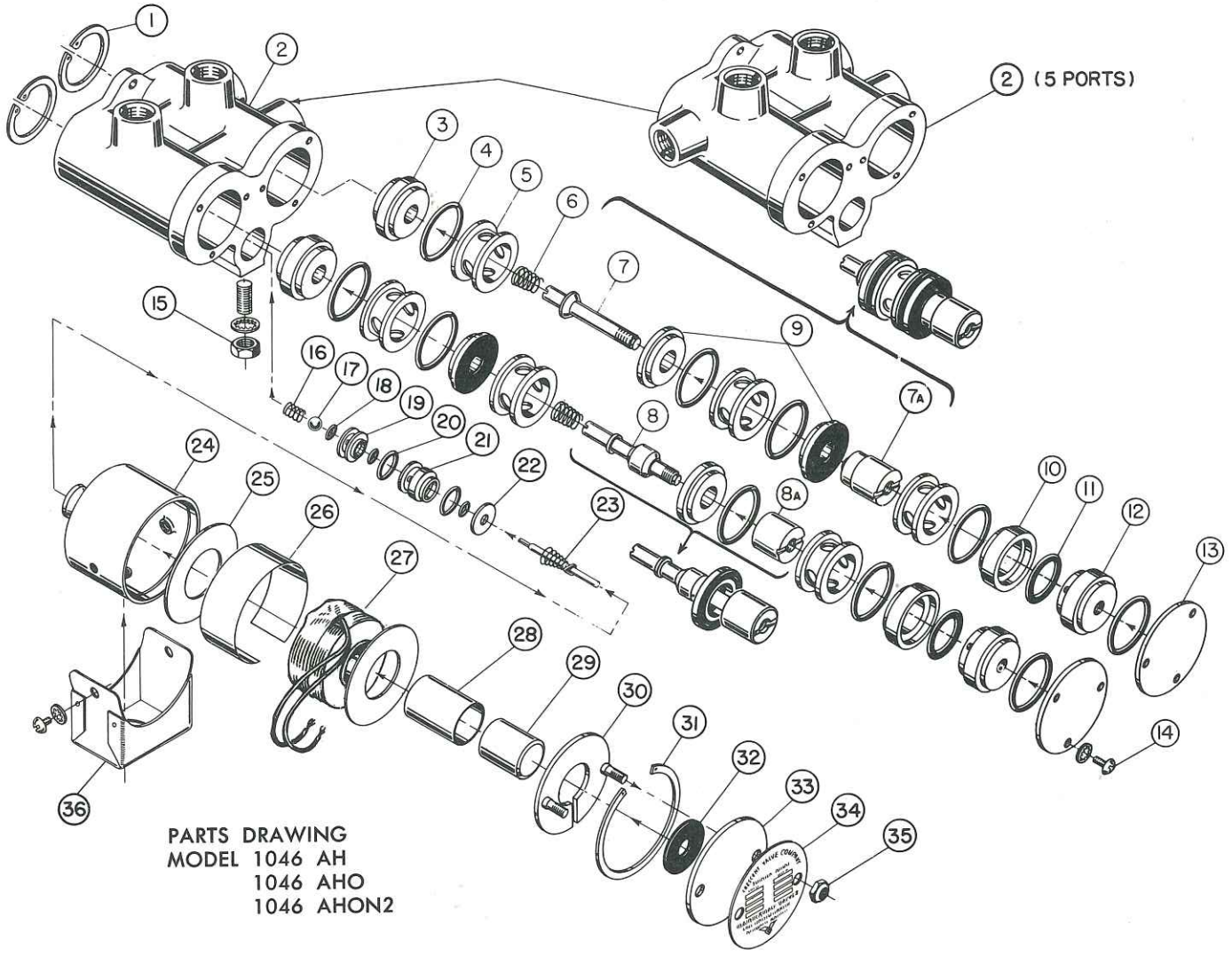
Part Code	Description	1/4" Models 11ROAM2 No. Req'd	Part Number	List Price	3/8" Models 12ROAM2 No. Req'd	Part Number	List Price	1/2" Models 13ROAM2 No. Req'd	Part Number	List Price	3/4" Models 14ROAM2 No. Req'd	Part Number	List Price	1" Models 15ROAM2 No. Req'd	Part Number	List Price
1	Body*	1	201126	7.30	1	201124	10.90	1	201123	10.90	1	201116	23.50	1	201117	23.50
2	Rotor	1	20361	10.60	1	20354	11.70	1	20354	11.70	1	20356	20.60	1	20356	20.60
3	Shaft	1	20433-1	3.40	1	20434-1	6.50	1	20434-1	6.50	1	20436-1	7.20	1	20436-1	7.20
4	Spring—Detent	1	21313	.20	1	21330	.10	1	21330	.10	1	21339	.30	1	21339	.30
5	Shear—Seal	1	21441	.30	1	21434	.90	1	21434	.90	1	21436	1.40	1	21436	1.40
6	Spacer—Bearing				1	21726	.50	1	21726	.50	1	21727	.60	1	21727	.60
7	Thrust Washer	1	22413-1	.10	2	22413-2	.40	2	22413-2	.40	2	22413-3	.50	1	22413-3	.50
8	Lock Washer—Body Screw	4	22502-6	.10	4	22502-7	.10	4	22502-7	.10	4	22502-10	.10	4	22502-10	.10
9	Washer—Shear Seal Spring	1	22507-5	.10	1	22507-1	.20	1	22507-1	.20	1	22507-2	.20	1	22507-2	.20
10	Housing	1	22728	5.30	1	22725	9.80	1	22725	9.80	1	22726	14.70	1	22726	14.70
11	Handle Assembly	1	32921-4	2.70	1	32921-2	4.20	1	32921-2	4.20	1	32922-1	5.40	1	32922-1	5.40
12	Plate—Detent	1			1	23043	.80	1	23043	.80	1	23040	.90	1	23040	.90
13	"O" Ring—Body	1	25141-133	.60	1	25124-9	.40	1	25124-9	.40	1	25120-20	.90	1	25120-20	.90
14	"O" Ring—Shear Seal	1	25101-6	.20	1	25101-10	.20	1	25101-10	.20	1	25101-14	.30	1	25101-14	.30
15	"O" Ring—Shaft	1	25101-7	.20	1	25101-11	.30	1	25101-11	.30	1	25101-13	.30	1	25101-13	.30
16	Pin—Stop				2	25335-8-10	.10	2	25335-8-10	.10	2	25335-8-10	.10	2	25335-8-10	.10
17	Pin—Handle	1	25335-8-16	.10	1	25335-8-16	.10	1	25335-8-16	.10	1	25335-10-22	.10	1	25335-10-22	.10
18	Pin—Rotor	1	25335-7-26	.30	1	25335-10-26	.20	1	25335-10-26	.20	1	25335-12-36	.20	1	25335-12-36	.20
19	Ball—Detent	1	25501-4	.10	1	25501-5	.10	1	25501-5	.10	1	25501-7	.20	1	25501-7	.20
20	Screw—Body	4	25618-6-16	.10	4	25618-7-20	.10	1	25618-7-20	.10	4	25618-10-24	.50	4	25618-10-24	.50
21	Thrust Bearing (Torrington)	1	NTA815	.70	1	FA-17061	.80	1	FA-17061	.80	1	NTA2840	1.30	1	NTA2840	1.30

*For 1/4", 3/8", 1/2", 3/4", 1" Tube add (AND) to Part Number.

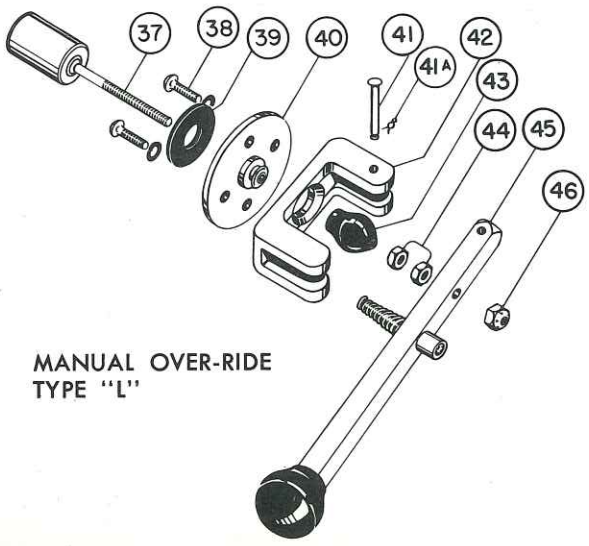
SPARE PARTS AND PRICES FOR MANUAL SHUT-OFF VALVES (SPRING RETURN)

Part Code	Description	1/4" Models 11ROAO2-MR 11ROAC2-MR No. Req'd	Part Number	List Price	3/8" Models 12ROAO2-MR 12ROAC2-MR No. Req'd	Part Number	List Price	1/2" Models 13ROAO2-MR 13ROAC2-MR No. Req'd	Part Number	List Price	3/4" Models 14ROAO2-MR 14ROAC2-MR No. Req'd	Part Number	List Price	1" Models 15ROAO2-MR 15ROAC2-MR No. Req'd	Part Number	List Price
1	Body*	1	201126	7.30	1	201124	10.90	1	201123	10.90	1	201116	23.50	1	201117	23.50
2	Rotor	1	20361	10.60	1	20354	11.70	1	20354	11.70	1	20356	20.60	1	20356	20.60
3	Shaft	1	20433-2	3.40	1	20434-2	6.50	1	20434-2	6.50	1	20436-2	7.20	1	20436-2	7.20
5	Shear Seal	1	21441	.30	1	21434	.90	1	21434	.90	1	21436	1.40	1	21436	1.40
6	Spacer—Bearing				1	21726	.50	1	21726	.50	1	21727	.60	1	21727	.60
7	Thrust Washer	1	22413-1	.10	2	22413-2	.40	2	22413-2	.40	2	22413-3	.50	2	22413-3	.50
8	Lock Washer—Body Screw	4	22502-6	.10	4	22502-7	.10	4	22502-7	.10	4	22502-10	.10	4	22502-10	.10
9	Washer—Shear Seal Spring	1	22507-5	.10	1	22507-1	.20	1	22507-1	.20	1	22507-2	.20	1	22507-2	.20
10	Housing	1	22728	5.30	1	22725	9.80	1	22725	9.80	1	22726	14.70	1	22726	14.70
11	Handle Assembly	1	32921-4MC	2.70	1	32921-2MC	4.20	1	32921-2MC	4.20	1	32922-1MC	5.40	1	32922-1MC	5.40
13	"O" Ring—Body	1	25141-133	.60	1	25124-9	.40	1	25124-9	.40	1	25120-20	.90	1	25120-20	.90
14	"O" Ring—Shear Seal	1	25101-6	.20	1	25101-10	.20	1	25101-10	.20	1	25101-14	.30	1	25101-14	.30
15	"O" Ring—Shaft	1	25101-7	.20	1	25101-11	.30	1	25101-11	.30	1	25101-13	.30	1	25101-13	.30
16	Pin—Stop				2	25335-8-10	.10	2	25335-8-10	.10	2	25335-8-10	.10	1	25335-8-10	.10
17	Pin—Handle	1	25335-8-16	.10	1	25335-8-16	.10	1	25335-8-16	.10	1	25335-10-22	.10	1	25335-10-22	.10
18	Pin—Rotor	1	25335-7-26	.30	1	25335-10-26	.20	1	25335-10-26	.20	1	25335-12-36	.20	1	25335-12-36	.20
20	Screw—Body	4	25618-6-16	.10	4	25618-7-20	.10	4	25618-7-20	.10	4	25618-10-24	.50	1	25618-10-24	.50
21	Thrust Bearing (Torrington)	1	NTA815	.70	1	FA17061	.80	1	FA17061	.80	1	NTA2840	1.30	1	NTA2840	1.30
22	Spring—Return Normally Open	1	21362	2.10	1	21362	2.10	1	21362	2.10	1	213108	3.40	1	213108	3.40
22	Spring—Return Normally Closed	1	213105	2.10	1	213105	2.10	1	213105	2.10	1	213109	3.40	1	213109	3.40
23	Pin—Spring (Housing) Norm. Open	1	25359-24	.20	1	25360-24	.20	1	25360-24	.20	1	25361-32	.40	1	25361-32	.40
23	Pin—Spring (Housing) Norm. Closed	1	25359-20	.20	1	25360-20	.20	1	25360-20	.20	1	25361-24	.40	1	25361-24	.40
24	Pin—Spring (Handle) Norm. Open	1	25359-20	.20	1	25360-20	.20	1	25360-20	.20	1	25361-28	.40	1	25361-28	.40
24	Pin—Spring (Handle) Norm. Closed	1	25359-14	.20	1	25360-14	.20	1	25360-14	.20	1	25361-24	.40	1	25361-24	.40

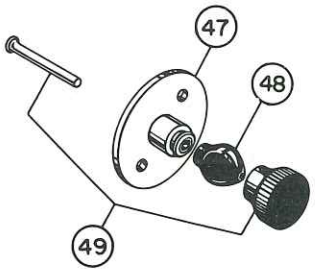
*For 1/4", 3/8", 1/2", 3/4" 1" Tube add (AND) to Part Number. Price on request.



PARTS DRAWING
MODEL 1046 AH
1046 AHO
1046 AHON2

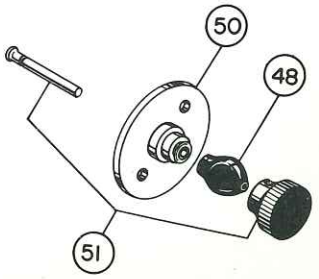


MANUAL OVER-RIDE
TYPE "L"



MANUAL
OVER-RIDE
TYPE "MK"
NON-LOCKING

MANUAL
OVER-RIDE
TYPE "MK"
LOCKING



MAIN VALVE PARTS

Part Code	No. Reqd.	Part Name	PART NUMBERS AND LIST PRICES ¼		⅜		½		¾	
1	2	Retaining Ring	10462-2	$ .15	10463-2	$ .18	10464-2	$ .20	10465-2	$ .40
2	1	Valve Body, AH or AHO (4-Port)	10462-1	15.75	10463-1	20.00	10464-1	25.30	10465-1	40.75
2	1	Valve Body (5-Port)	10462-1N2	16.75	10463-1N2	21.00	10464-1N2	26.50	10465-1N2	42.25
3	2	Stem Guide	10462-3	.60	10463-3	.80	10464-3	1.20	10465-3	1.90
4	10	Bore Seal	10462-4	.26	10463-4	.27	10464-4	.28	10465-4	.34
5	6	Spacing Sleeve	10462-5	.50	10463-5	.60	10464-5	1.00	10465-5	1.90
6	2	Biasing Spring	10462-6	.12	10463-6	.15	10464-6	.15	10465-6	.24
6A	1	Spring Retaining Ring							10465-7	.10
7	1	#1 Valve Member	10462-16	2.30	10463-16	2.60	10464-16	3.30	10465-16	6.60
8	1	#2 Valve Member	10462-9	2.40	10463-9	2.90	10464-9	3.50	10465-9	6.80
9	4	Valve Seat (Rubber)	10462-8	1.10	10463-8	1.20	10464-8	1.40	10465-8	2.10
9	4	Valve Seat (Teflon)	10462-8T	1.25	10463-8T	1.45	10464-8T	2.20	10465-8T	3.50
10	2	Piston Guide	10462-10	.50	10463-10	.60	10464-10	.80	10465-10	1.80
11	2	Piston Seal	10462-11	.26	10463-11	.26	10464-11	.27	10465-11	.30
12	2	Pressure Cap	10462-12	1.00	10463-12	1.20	10464-12	1.40	10465-12	3.00
13	2	Bore Cover	10462-13	.20	10463-13	.25	10464-13	.30	10465-13	.34
14	6	Screw (Set of 6)	10462-15	.10	10463-15	.10	10464-15	.10		
14	8	Screw (Set of 8)							10465-15	.10
14A	6	Lock Washer (Set of 6)	10462-14	.05	10463-14	.05	10464-14	.05		
14A	8	Lock Washer (Set of 8)							10465-14	.05

PILOT VALVE PARTS

(Used in all sizes of models 1046 AH, AHO and AHON2)

Part Code	Reqd.	Part Name	Part Number	List Price
15	1	Set Screw, Nut and Washer	10461-18	$ .25
16	1	Valve Spring	10461-28	.10
17	1	Ball Valve	10461-27	.10
18	3	Plunger Seal	10461-24	.24
19	1	Pressure Sleeve	10461-26	.60
20	2	Bore Seal	10461-23	.25
21	1	Exhaust Sleeve	10461-25	.70
22	1	Retaining Washer	10461-22	.12
23	1	Plunger-Spring(AC)	10461-17	1.10
23	1	Plunger-Spring(DC)	10461-D17	1.10

SOLENOID ASSEMBLIES

	List Price
#2082 Complete (1046 AH, AHO, AHON2) *Note:* Price listed is for solenoid with 115-60 Coil. Check coil prices for additives. The number 2082 is used for A.C., D2092 for D.C. For SPECIAL VOLTAGES, consult factory.	$12.00

MANUAL OVER-RIDE ASSEMBLIES

	List Extra
#2082 Type "L"	$6.25
#2082 Type "K"	
(1) Ordered as part of valve or solenoid:	
Non-Locking	1.85
Locking	2.50
(2) Ordered separately:	
Non-Locking	2.10
Locking	2.75

NO. 2082 SOLENOID PARTS

Part Code	No. Reqd.	Part Name	Part Number	List Price
24	1	Solenoid Casing	2082-1	$3.95
25	2	Insulating Washer	2082-2	.10
26	1	Insulating Strip	2082-2a	N.C.
27	1	*Coil: 24-60	2082-5	3.25
27	1	*Coil: 115-60	2082-5	3.25
27	1	*Coil: 230-60	2082-5	3.50
27	1	*Coil: 460-60	2082-5	3.75
27	1	*Coil: 550-60	2082-5	4.05
27	1	*Coil: 115-25	2082-5	3.60
27	1	*Coil: 230-25	2082-5	3.75
27	1	*Coil: 115-50	2082-5	3.35
27	1	*Coil: 230-50	2082-5	3.60
27	1	*Coil: 460-50	2082-5	4.05
27	1	*Coil: 6V DC	2092-5	3.55
27	1	*Coil: 12V DC	2092-5	3.80
27	1	*Coil: 24V DC	2092-5	4.00
28	1	Plunger Guide	2082-4	.75
29	1	Plunger (AC)	2082-3	1.45
29	1	Plunger (DC)	2092-D3	1.70
30	1	Magnetic Flange	2082-6	.50
31	1	Retaining Ring	2082-7	.35
32	1	Plunger Bumper	2082-11	.10
33	1	Cover	2082-8	.25
35	2	Cap Nut	2082-10	.08
36	1	Conduit Box and Screws	2082-12	.60
37	1	Rod and Plunger Assembly (AC)	2082-23	2.25
37	1	Rod and Plunger Assembly (DC)	2092-D23	2.50
38	2	Screw and Washer (2 each)	2082-18	.10
39	1	Rubber Bumper	2082-33	.10
40	1	Cover, L	2082-17	.65
41	1	Hinge Pin	2082-20	.18
41A	1	Spring Cotter Pin	2082-21	.10
42	1	Bracket	2082-19	2.10
43	1	Dust Cap, L	2082-34	.18
44	2	Lock Nut (Set of 2)	2082-25	.10
45	1	Lever Assembly	2082-22	2.55
46	1	Stop Nut	2082-24	.10
47	1	Cover, MK Non-Locking	2082-38	.90
48	1	Dust Cap, MK	2082-36	.18
49	1	Trip Pin Assembly, Non-Locking	2082-39	1.00
50	1	Cover, MK Locking	2082-42	1.50
51	1	Trip Pin Assembly, Locking	2082-43	1.05

*Price includes Strip and 2 insulating washers. For SPECIAL VOLTAGES, consult factory.

A. TO DISASSEMBLE PILOT VALVE

1. If valve is still connected to piping, shut off pressure and operate pilot valve to RELIEVE VALVE OF ALL INTERNAL PRESSURE.
2. Loosen jam nut and set screw 15, and remove solenoid.
3. Pilot valve parts above ball valve 17 may be picked out with the help of an ordinary wire hooked at one end.
4. To remove ball 17, use pencil magnet or invert valve.

B. TO REASSEMBLE PILOT VALVE

1. Carefully inspect all O-Rings. Replace any that appear defective. O-Rings will be easier to install if lubricated with mineral oil or Vaseline.
2. With spring 16 and ball valve 17 in position, place one small O-Ring 18 flat in counterbore surrounding ball. This O-Ring serves as the pilot valve inlet port.
3. Assemble a second O-Ring 18 with sleeve 19 and drop into bore. Follow with a large O-Ring 20 and press into position. Use same procedure in loading sleeve 21 into bore.
4. Install retaining washer 22 and pilot plunger 23, checking latter for free up-and-down movement.
5. Install solenoid, pressing it down firmly while tightening set screw and jam nut.

C. TO DISASSEMBLE MAIN VALVE

1. Remove solenoid as instructed above.
2. Remove screws 14 and bore covers 13.
3. Use a relatively long 10-32 screw as a "puller" to remove pressure caps 12 and the poppets coupled to pistons 7a and 8a from their respective bores. If poppets are hard to remove grip screw with pliers and use pliers as lever to raise poppets.

   CAUTION: Do not remove parts through lower ends of bores. Snap ring grooves will damage O-Rings.

   Many of the parts in each bore will be removed with the poppet assembly. The remainder may be picked out with a hooked wire, or pushed out by applying a rod at the bottom of the bore.

D. TO REASSEMBLE MAIN VALVE

1. Inspect O-Rings as suggested in B-1 above.
2. With retaining rings 1 in place, drop a stem guide 3 into each bore and follow with an O-Ring 4 for each, pressing the O-Rings down into the stem guide grooves. Next, drop a spacer 5 into each bore.
3. To the bore associated with poppet assembly 8, add a second O-Ring 4, a valve seat 9, and the center spacing sleeve 5.
4. The two bores are now ready to receive the poppet assemblies, including springs 6. Make sure stems enter stem guides.

   NOTE: If it is necessary to disassemble a poppet to replace a valve seat, and if a burr is formed at stem slot when reassembling, use file to remove burr before installing poppet.
5. With the poppets in place, install the remaining parts in the sequence indicated in the exploded view, drawing bore cover screws 14 down tight.

E. TROUBLE SHOOTING: PILOT VALVE

1. Valve leaks through pilot exhaust with solenoid de-energized.
   a. Fluid is leaking past ball valve. Check small O-Ring immediately above ball for foreign matter or defects. Make sure ball is on top of spring, not under it.
2. Valve leaks through pilot exhaust with solenoid energized.
   a. Fluid is leaking past one of the O-Rings at the top of pressure sleeve 19. Check for foreign matter, wear or damaged ring.
3. Valve will not cycle evenly.
   a. If you are controlling a gaseous fluid such as air, valve must be lubricated.

F. TROUBLE SHOOTING: MAIN VALVE

1. Valve does not reverse when solenoid is energized.
   a. Make sure solenoid is fully down in position (See "B-5").
2. Valve leaks through main exhaust with solenoid de-energized.
   a. Check valve seats for foreign matter or defects.
   b. Check O-Ring bore seals for damage.
3. Valve leaks through main exhaust with solenoid energized.
   a. Check as in 2-a and 2-b above.
   b. Check O-Ring piston seals 11 for excessive wear.
4. Valve will not operate properly at lower pressures such as 30-50 psi.
   a. Check piston seals for excessive swell due to type of lubricating oil used or fluid controlled.

G. TO DISASSEMBLE SOLENOID

1. Remove lock nuts and cover.
2. Use point of scriber to free one end of snap ring from groove and remove ring.
3. Use studs to lift magnetic flange from casing.
4. Remaining parts may now be removed easily.

H. TO REASSEMBLE SOLENOID

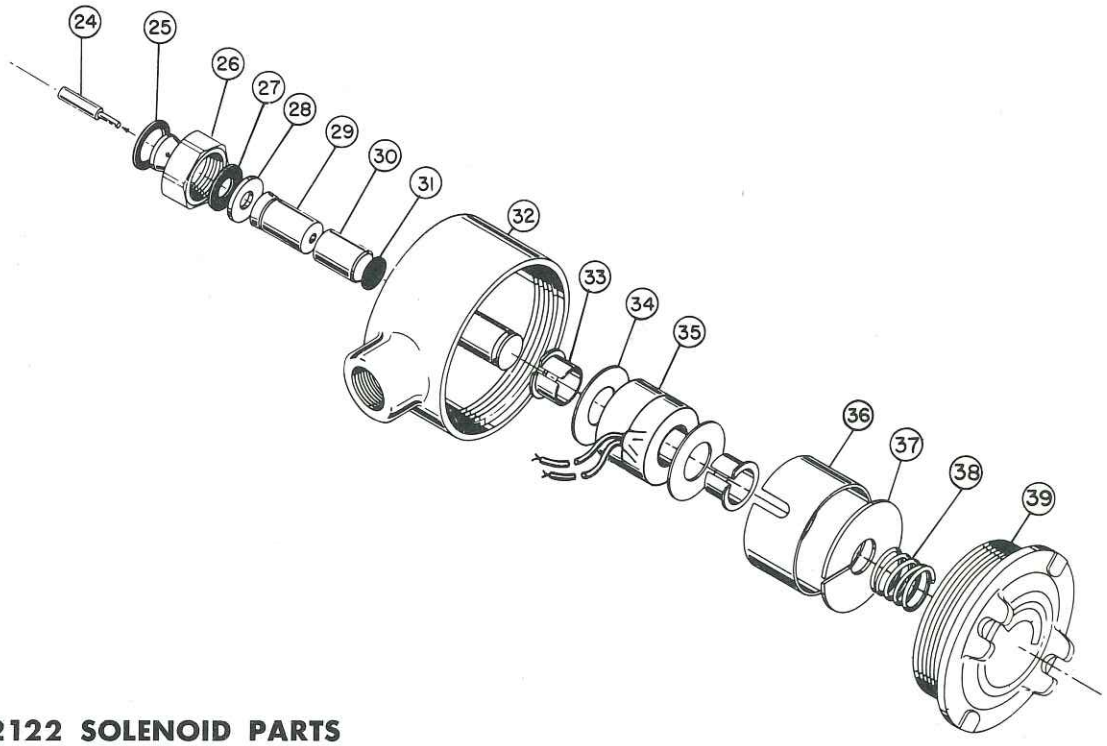
1. Place one of the insulating washers 25 in the bottom of the casing, and line the inner wall with the strip 26, leaving gromet hole clear.
2. Holding coil above casing with leads pointing upwardly and in line with gromet hole, draw lead wires through gromet and lower coil into casing.
3. Press plunger guide tube 28 down into position surrounding butt to center coil and lower insulating washer, and drop plunger 29 into guide tube.
4. Place upper insulating washer and magnetic flange 30 on top of coil and install retaining ring 31. Remainder of assembly will will be self-evident.

FOR BEST RESULTS, MOUNT VALVE ON A HORIZONTAL BASE WITH SOLENOID ON TOP. INSTALL FILTER AND LUBRICATOR IN LINE AHEAD OF EACH VALVE.

POWER CONSUMPTION

SOLENOID	D.C. WATTS	A.C. WATTS	A.C. VOLT AMPERES	
			INRUSH	HOLDING
D2092-2082	16	20	70	34
DJ2092-J2082	16	20	70	34
D2122-2122	16	18	70	30

To determine current in amperes: divide D.C. Watts by line voltage, A.C. Volt Amperes by line voltage.



NO. 2122 SOLENOID PARTS

(Models 1140-AH, 1140-AHO and 1140-AHON2, 1141-AH and 1141-AHO)

Part Code	No. Reqd.	Part Name	Part Number	List Price
24	1	Spacing Plunger	1140-16	$ .50
25	1	Gasket	2122-1	.10
26	1	Swivel Adapter	2122-2	3.00
27	1	Rubber Washer	2122-3	.10
28	1	Brass Washer	2122-4	.20
29	1	Butt (AC)	2122-5	2.25
29	1	Butt (DC)	2122-D5	2.75
30	1	Plunger	2122-11L	1.75
31	1	Bumper	2122-13	.10
32	1	Casing Assembly	2122-6	15.50
33	2	Coil Sleeve	2122-7	.25
34	2	Insulating Washer	2122-8	.12
35	1	*Coil: 24-60	2122-9	3.85
35	1	*Coil: 115-60, 115-50	2122-9	4.00
35	1	*Coil: 115-25	2122-9	4.35
35	1	*Coil: 230-60, 230-50	2122-9	4.35
35	1	*Coil: 230-25	2122-9	4.60
35	1	*Coil: 460-60, 460-50	2122-9	4.60
35	1	*Coil: 550-60	2122-9	4.60
35	1	*Coil: 6V DC	2122-9	6.00
35	1	*Coil: 12V DC	2122-9	6.30
35	1	*Coil: 24V DC	2122-9	7.05
36	1	Magnetic Sleeve	2122-10	.90
37	1	Magnetic Washer	2122-12	.30
38	1	Spring	2122-14	.25
39	1	Cover	2122-15	4.50

*Price includes 2 insulating washers.
For SPECIAL VOLTAGES, consult factory.

Note 1: Main and pilot valve parts for Model 1140 same as for Model 1046

Note 2: Main and pilot valve parts for Model 1141 same as for Model 1047

COMPLETE SOLENOID

No. 2122 Solenoid Complete $31.50

Note: 1. Price listed is for solenoid with 115-60 Coil. Check coil prices for additives. The number 2122 is used for A.C., D2122 for D.C. For SPECIAL VOLTAGES, consult factory.

2. Advise valve model solenoid is to operate.

SERVICE DATA: 2122 SOLENOID

M. TO CHANGE COIL

1. Remove cover 39 and parts 38, 37 and 36. The defective coil 35 may now be removed from guide tube. If it does not come freely, turn from side to side while pulling outwardly. In case of burned-out coil it may be necessary to insert screwdriver through casing outlet and pry coil outwardly.
2. To Install New Coil: With the lower coil sleeve 33 in position at base of guide tube, follow with an insulating washer, the coil, a second washer 34 and the upper coil sleeve. The coil leads should point inwardly and the ends should be drawn through the outlet opening while bottoming coil on guide tube. Parts 36, 37, 38 and 39 may now be replaced.

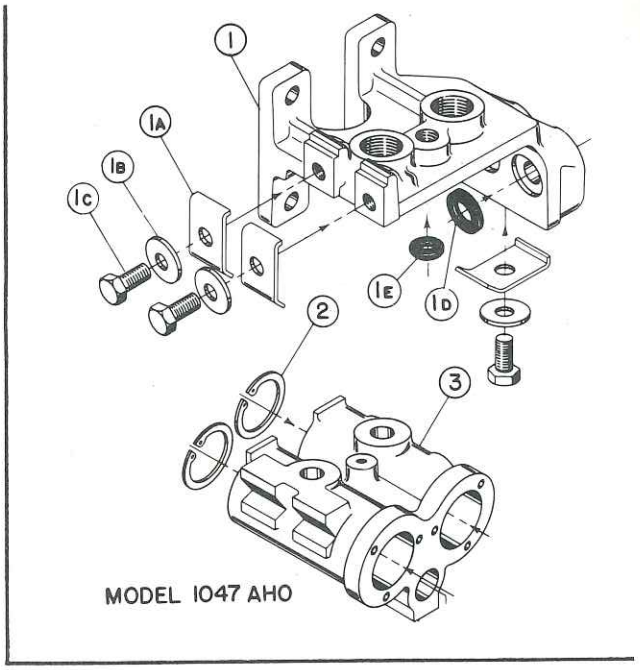
N. INNER GUIDE TUBE ASSEMBLY

1. The parts 26 to 31, inclusive, involved in the inner guide tube assembly, should not require attention short of many millions of cycles. Unless the need arises this assembly should be left undisturbed.
2. To Disassemble: Having removed the solenoid from the pilot valve bore, loosen and remove swivel adapter 26 from connection at bottom of casing 32. An ordinary $\frac{3}{8}$-16 bolt may be used as a "puller" to withdraw butt 29 from tube. Then drop plunger 30 and bumper 31 out into hand.
3. To Reassemble: Invert casing 32 with guide tube opening pointed upwardly. Drop bumper 31 into bottom of tube and flatten. Follow with plunger 30 and butt 29, tapping latter lightly to seat in tapered guide. Then, with rubber washer 27 and brass washer 28 bottomed in well of adapter 26, thread latter onto connection at bottom of casing and draw up snugly.

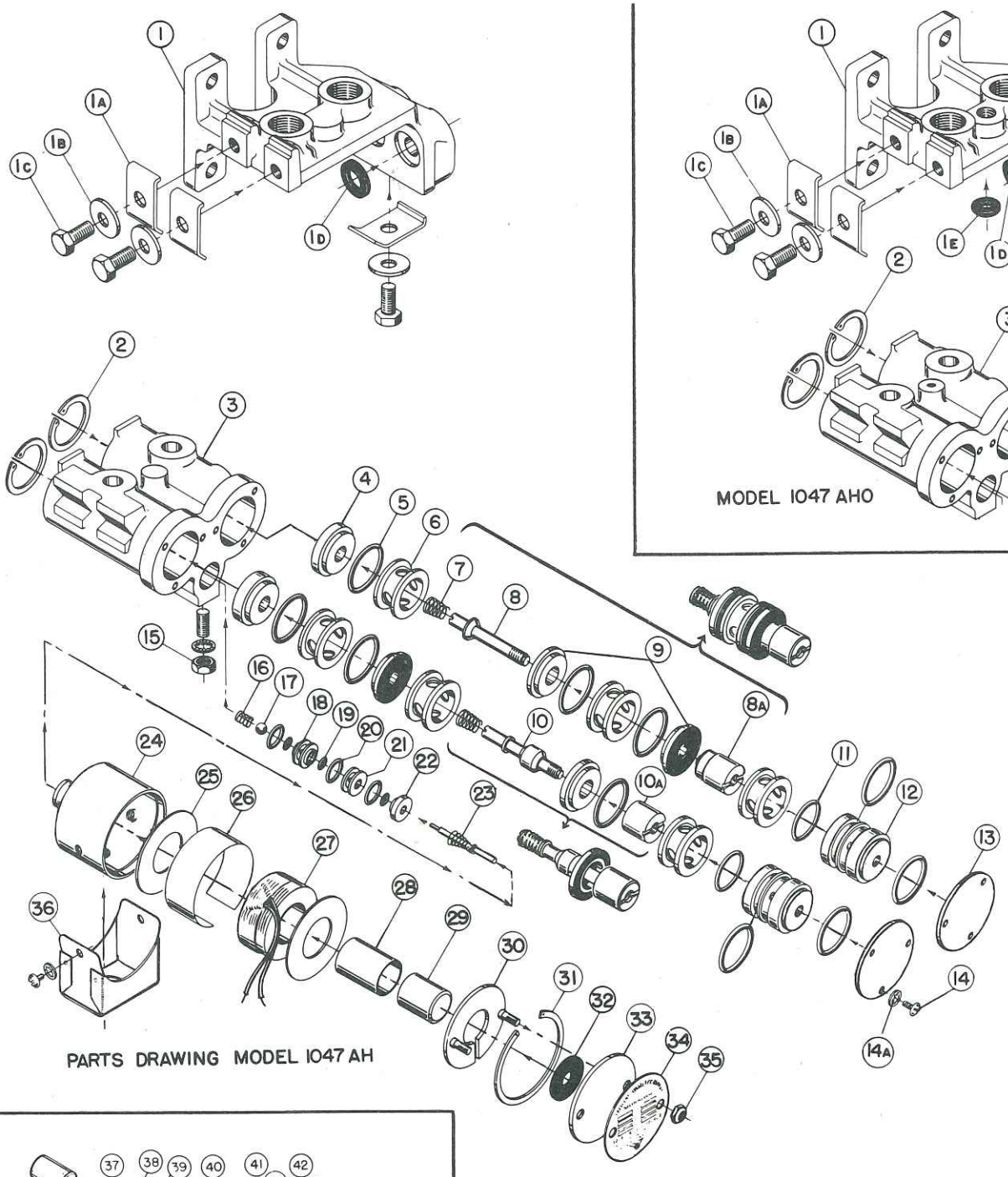
O. TO ASSEMBLE WITH VALVE

1. Make sure that spacing plunger 24 is seated properly on upper end of pilot plunger. Then guide bore in adapter 26 down smoothly over upper end of spacing plunger while lowering adapter into pilot bore. If spacing plunger catches on adapter and springs off of pilot plunger solenoid will not operate pilot valve.
2. Press down firmly on solenoid cover while tightening set screw against swivel adapter. Excessive torque force is not required when tightening screw.

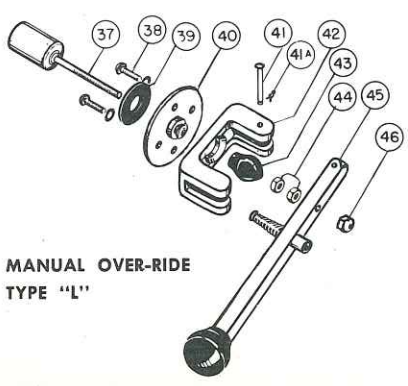
SPARE PARTS AND PRICES FOR MODEL 1047 SOLENOID-PILOT 4-WAY VALVES (SUB-BASE, WITH STANDARD SOLENOID)



MODEL 1047 AHO

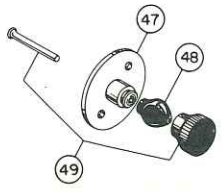


PARTS DRAWING MODEL 1047 AH

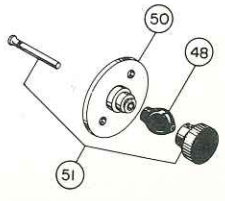


MANUAL OVER-RIDE
TYPE "L"

MANUAL OVER-RIDE
TYPE "MK" NON-LOCKING



MANUAL OVER-RIDE
TYPE "MK" LOCKING



MAIN VALVE PARTS

Code	No. Reqd.	Part Name	1/4" Part Number	1/4" List Price	3/8" Part Number	3/8" List Price	1/2" Part Number	1/2" List Price
		Valve less Sub-Base, AH	10472 AH	$49.75	10473 AH	$55.40	10474 AH	$64.50
		Valve less Sub-Base, AHO	10472 AHO	49.75	10473 AHO	55.40	10474 AHO	64.50
		Sub-Base Assembly, AH	10472-30A	13.50	10473-30A	16.85	10474-30A	20.25
		Sub-Base Assembly, AHO	10472-30A	14.00	10473-30A	17.35	10474-30A	20.75
1	1	Sub Base, AH	10472-30	12.00	10473-30	15.25	10474-30	19.00
1	1	Sub-Base, AHO	10472-30	12.50	10473-30	15.75	10474-30	19.50
1A	3	Assembly Clamp	10472-32	.40	10473-32	.40	10474-32	.40
1B	3	Washer	10472-33	N/C	10473-33	N/C	10474-33	N/C
1C	3	Assembly Bolt	10472-34	.10	10473-34	.10	10474-34	.10
1D	4	Main Port Seal	10472-31	.15	10473-31	.15	10474-31	.15
1E	1	Pilot Port Seal (AHO)	10472-35	.15	10473-35	.15	10474-35	.15
2	2	Retaining Ring	10462-2	.15	10463-2	.18	10464-2	.20
3	1	Valve Body, AH or AHO	10472-1	15.00	10473-1	18.75	10474-1	23.50
4	2	Stem Guide	10462-3	.60	10463-3	.80	10464-3	1.20
5	10	Bore Seal	10462-4	.26	10463-4	.27	10464-4	.28
6	6	Spacing Sleeve	10462-5	.50	10463-5	.60	10464-5	1.00
7	2	Biasing Spring	10462-6	.12	10463-6	.15	10464-6	.15
8 & 8A	1	#1 Valve Member	10462-16	2.30	10463-16	2.60	10464-16	3.30
9	4	Valve Seat (Rubber)	10462-8	1.10	10463-8	1.20	10464-8	1.40
9	4	Valve Seat (Teflon)	10462-8T	1.25	10463-8T	1.45	10464-8T	2.20
10 & 10A	1	#2 Valve Member	10462-9	2.40	10463-9	2.90	10464-9	3.50
11	2	Piston Seal	10462-11	.26	10463-11	.26	10464-11	.27
12	2	Piston Guide-Cap	10472-12	1.60	10473-12	1.80	10474-12	2.10
13	2	Bore Cover	10462-13	.20	10463-13	.25	10464-13	.30
14	6	Screw (Set of 6)	10462-15	.10	10463-15	.10	10464-15	.10
14A	6	Lock Washer (Set of 6)	10462-14	.05	10463-14	.05	10464 14	.05

PILOT VALVE PARTS

(Used in all sizes of models 1047 AH and AHO)

Part Code	No. Reqd.	Part Name	Part Number	List Price
15	1	Set Screw, Nut and Washer	10461-18	$ .25
16	1	Valve Spring	10461-28	.10
17	1	Ball Valve	10461-27	.10
18	1	Pressure Sleeve	1047-26	.60
19	3	Plunger Seal	10461-24	.24
20	3	Bore Seal	10461-23	.25
21	1	Exhaust Sleeve	1047-25	.40
22	1	Plunger Guide	1047-22	.25
23	1	Plunger-Spring(AC)	10461-17	1.10
23	1	Plunger-Spring(DC)	10461-D17	1.10

SOLENOID ASSEMBLIES

	List Price
#2082 Complete (1047 AH and AHO) *Note:* Price listed is for solenoid with 115-60 Coil. Check coil prices for additives. The number 2082 is used for A.C., D2092 for D.C. For SPECIAL VOLTAGES, consult factory.	$12.00

MANUAL OVER-RIDE ASSEMBLIES

	List Extra
#2082 Type "L"	$6.25
#2082 Type "MK"	
(1) Ordered as part of valve or solenoid:	
Non-Locking	1.85
Locking	2.50
(2) Ordered separately:	
Non-Locking	2.10
Locking	2.75

NO. 2082 SOLENOID PARTS

Part Code	No. Reqd.	Part Name	Part Number	List Price
24	1	Solenoid Casing	2082-1	$3.95
25	2	Insulating Washer	2082-2	.10
26	1	Insulating Strip	2082-2a	N.C
27	1	*Coil: 24-60	2082-5	3.25
27	1	*Coil: 115-60	2082-5	3.25
27	1	*Coil: 230-60	2082-5	3.50
27	1	*Coil: 460-60	2082-5	3.75
27	1	*Coil: 550-60	2082-5	4.05
27	1	*Coil: 115-25	2082-5	3.60
27	1	*Coil: 230-25	2082-5	3.75
27	1	*Coil: 115-50	2082-5	3.35
27	1	*Coil: 230-50	2082-5	3.60
27	1	*Coil: 460-50	2082-5	4.05
27	1	*Coil: 6V DC	2092-5	3.55
27	1	*Coil: 12V DC	2092-5	3.80
27	1	*Coil: 24V DC	2092-5	4.00
28	1	Plunger Guide	2082-4	.75
29	1	Plunger (AC)	2082-3	1.45
29	1	Plunger (DC)	2092-D3	1.70
30	1	Magnetic Flange	2082-6	.50
31	1	Retaining Ring	2082-7	.35
32	1	Plunger Bumper	2082-11	.10
33	1	Cover	2082-8	.25
35	2	Cap Nut	2082-10	.08
36	1	Conduit Box and Screws	2082-12	.60
37	1	Rod and Plunger Assembly (AC)	2082-23	2.25
37	1	Rod and Plunger Assembly (DC)	2092-D23	2.50
38	2	Screw and Washer (2 each)	2082-18	.10
39	1	Rubber Bumper	2082-33	.10
40	1	Cover, L	2082-17	.65
41	1	Hinge Pin	2082-20	.18
41A	1	Spring Cotter Pin	2082-21	.10
42	1	Bracket	2082-19	2.10
43	1	Dust Cap, L	2082-34	.18
44	2	Lock Nut (Set of 2)	2082-25	.10
45	1	Lever Assembly	2082-22	2.55
46	1	Stop Nut	2082-24	.10
47	1	Cover, MK Non-Locking	2082-38	.90
48	1	Dust Cap, MK	2082-36	.18
49	1	Trip Pin Assembly, Non-Locking	2082-39	1.00
50	1	Cover, MK Locking	2082-42	1.50
5T	1	Trip Pin Assembly, Locking	2082-43	1.05

*Price includes Strip and 2 insulating washers. For SPECIAL VOLTAGES, consult factory.

A. TO DISASSEMBLE PILOT VALVE

1. If valve is still connected to piping, shut off pressure and operate pilot valve to RELIEVE VALVE OF ALL INTERNAL PRESSURE.
2. Loosen jam nut and set screw 15, and remove solenoid.
3. Pilot valve parts above ball valve 17 may be picked out with the help of an ordinary wire hooked at one end.
4. To remove ball 17, use pencil magnet or invert valve.

B. TO REASSEMBLE PILOT VALVE

1. Carefully inspect all O-Rings. Replace any that appear defective. O-Rings will be easier to install if lubricated with mineral oil or Vaseline.
2. With spring 16 and ball 17 in position, place one large O-Ring 20 in bottom of bore.
3. Insert one of the small O-Rings 19 in the counterbore at each end of pressure sleeve 18 and drop the latter into the bore. Press sleeve down into large O-Ring at bottom of bore.
4. Follow with a second large O-Ring 20, exhaust sleeve 21, and the third O-Ring 20.
5. Insert the third small O-Ring 19 in counterbore at bottom of plunger guide 22, then push latter down against other parts in bore.
6. Insert pilot plunger 23 in guide 22. Then install solenoid, pressing it down firmly while tightening set screw and jam nut.

C. TO DISASSEMBLE MAIN VALVE

1. Remove solenoid as instructed above.
2. Remove screws 14 and bore covers 13.
3. Use a relatively long 10-32 screw as a "puller" to remove piston guide-caps 12 and the poppets coupled to pistons 8a and 10a from their respective bores. If poppets are hard to remove grip screw with pliers and use pliers as lever to raise poppets.

   CAUTION: Do not remove parts through lower ends of bores. Snap ring grooves will damage O-Rings.

   Many of the parts in each bore will be removed with the poppet assembly. The remainder may be picked out with a hooked wire, or pushed out by applying a rod at the bottom of the bore.

D. TO REASSEMBLE MAIN VALVE

1. Inspect O-Rings as suggested in B-1 above.
2. With retaining rings 2 in place, drop a stem guide 4 into each bore and follow with an O-Ring 5 for each, pressing the O-Rings down into the stem guide grooves. Next, drop a spacer 6 into each bore.
3. To the bore associated with poppet assembly 10, add a second O-Ring 5, a valve seat 9, and the center spacing sleeve 6.
4. The two bores are now ready to receive the poppet assemblies, including springs 7. Make sure stems enter stem guides.

   NOTE: If it is necessary to disassemble a poppet to replace a valve seat, and if a burr is formed at stem slot when reassembling, use file to remove burr before installing poppet.
5. With the poppets in place, install the remaining parts in the sequence indicated in the exploded view, drawing bore cover screws 14 down tight.

E. TROUBLE SHOOTING: PILOT VALVE

1. Valve leaks through pilot exhaust with solenoid de-energized.
   a. Fluid is leaking past ball valve. Check small O-Ring immediately above ball for foreign matter or defects. Make sure ball is on top of spring, not under it.
2. Valve leaks through pilot exhaust with solenoid energized.
   a. Fluid is leaking past one of the O-Rings at the top of pressure sleeve 18. Check for foreign matter, wear or damaged ring.
3. Valve will not cycle evenly.
   a. If you are controlling a gaseous fluid such as air, valve must be lubricated.

F. TROUBLE SHOOTING: MAIN VALVE

1. Valve does not reverse when solenoid is energized.
   a. Make sure solenoid is fully down in position (See "B-6").
2. Valve leaks through main exhaust with solenoid de-energized.
   a. Check valve seats for foreign matter or defects.
   b. Check O-Ring bore seals for damage.
3. Valve leaks through main exhaust with solenoid energized.
   a. Check as in 2-a and 2-b above.
   b. Check O-Ring piston seals 11 for excessive wear.
4. Valve will not operate properly at lower pressures such as 30-50 psi.
   a. Check piston seals for excessive swell due to type of lubricating oil used or fluid controlled.

G. TO DISASSEMBLE SOLENOID

1. Remove lock nuts and cover.
2. Use point of scriber to free one end of snap ring from groove and remove ring.
3. Use studs to lift magnetic flange from casing.
4. Remaining parts may now be removed easily.

H. TO REASSEMBLE SOLENOID

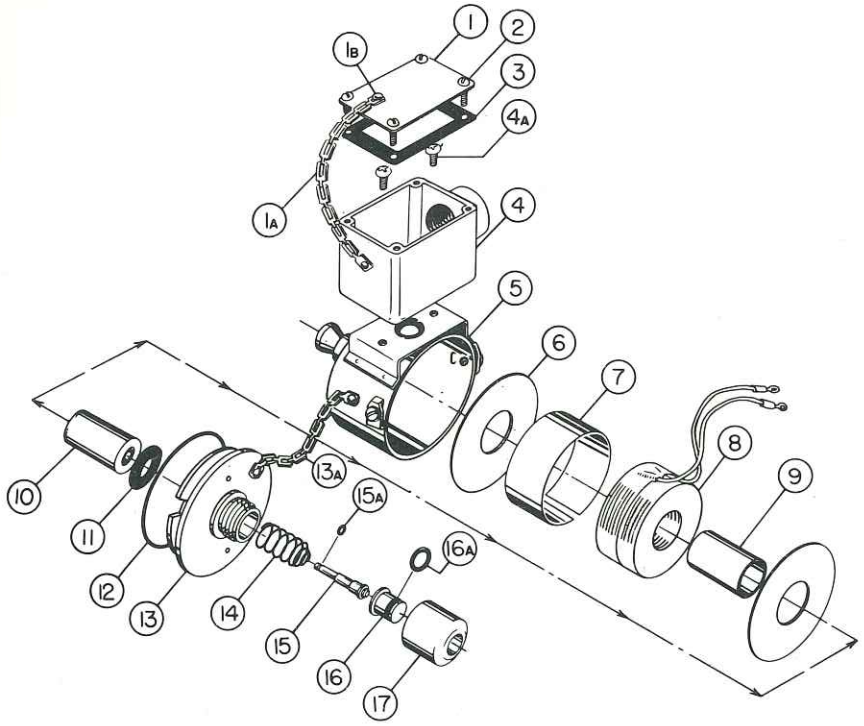
1. Place one of the insulating washers 25 in the bottom of the casing and line the inner wall with the strip 26, leaving grommet hole clear.
2. Holding coil above casing with leads pointing upwardly and in line with grommet hole, draw lead wires through grommet and lower coil into casing.
3. Press plunger guide tube 28 down into position surrounding butt to center coil and lower insulating washer, and drop plunger 29 into guide tube.
4. Place upper insulating washer and magnetic flange 30 on top of coil and install retaining ring 31. Remainder of assembly will be self-evident.

FOR BEST RESULTS, MOUNT VALVE ON A HORIZONTAL BASE WITH SOLENOID ON TOP. INSTALL FILTER AND LUBRICATOR IN LINE AHEAD OF EACH VALVE.

POWER CONSUMPTION

SOLENOID	D.C. WATTS	A.C. WATTS	A.C. VOLT AMPERES	
			INRUSH	HOLDING
D2092-2082	16	20	70	34
DJ2092-J2082	16	20	70	34
D2122-2122	16	18	70	30

To determine current in amperes: divide D.C. Watts by line voltage, A.C. Volt Amperes by line voltage.



J2082 AND DJ2092 SOLENOID PARTS

PART CODE	NO. REQD.	PART NAME	PART NUMBER	LIST PRICE
1	1	Box Cover	J2082-48	$ .30
1A	1	Box Chain (Including Rivets)	J2082-51	.30
1B	4	Chain Rivet	J2082-52	N/C
2	4	Cover Screw	J2082-49	.10 (4)
3	1	Box Cover Gasket	J2082-47	.18
4	1	Junction Box & Screws	J2082-45	1.10
4A	2	Assembly Screw	J2082-46	N/C
5	1	Casing Assembly	J2082-1	4.10
6	2	Insulating Washer	2082-2	.10
7	1	Insulating Strip	2082-2A	N/C
8	1	*Coil: 24-60	J2082-5	3.60
8	1	*Coil: 115-60	J2082-5	3.60
8	1	*Coil: 230-60	J2082-5	3.85
8	1	*Coil: 460-60	J2082-5	4.10
8	1	*Coil: 550-60	J2082-5	4.40
8	1	*Coil: 115-25	J2082-5	3.95
8	1	*Coil: 230-25	J2082-5	4.10
8	1	*Coil: 115-50	J2082-5	3.70
8	1	*Coil: 230-50	J2082-5	3.95
8	1	*Coil: 460-50	J2082-5	4.40
8	1	*Coil: 6V DC	DJ2092-5	3.90
8	1	*Coil: 12V DC	DJ2092-5	4.15
8	1	*Coil: 24V DC	DJ2092-5	4.35
9	1	Plunger Guide	2082-4	.75
10	1	Plunger (AC)	J2082-3	1.60
10	1	Plunger (DC)	J2092-D3	1.85
11	1	Bumper	J2082-6	.10
12	1	Cover Gasket	J2082-7	.20
13	1	Cover Assembly	J2082-8	2.00
13A	1	Solenoid Chain (Including Rivets)	J2082-50	.30
14	1	Spring	J2082-9	.15
15	1	Trip Pin	J2082-13	.50
15A	1	Retainer O-Ring	J2082-14	.27
16	1	Push Button	J2082-10	.35
16A	1	Button Seal	J2082-11	.25
17	1	Cap	J2082-12	.80

*Price includes Strip and 2 Insulating Washers. For SPECIAL VOLTAGES, Consult Factory.

J2082 SOLENOID COMPLETE $16.50

Note: Price listed is for solenoid with 115-60 Coil. Check coil prices for additives. The number J2082 is used for A.C., DJ2092 for D.C. For SPECIAL VOLTAGES, Consult Factory.

SERVICE DATA: J2082 SOLENOID

J. TO CHANGE COIL

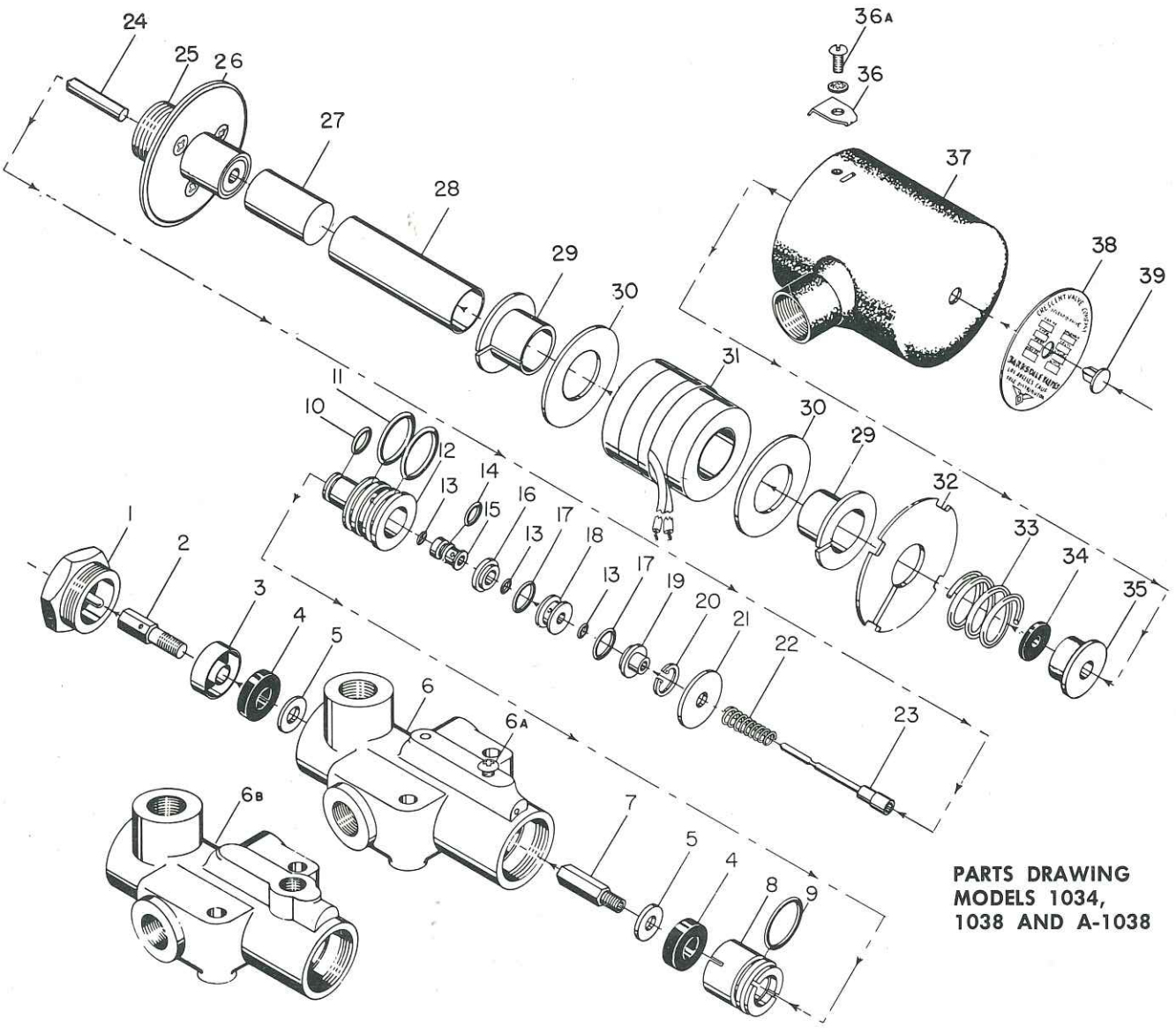
1. Loosen screws to free assembly clips which secure cover assembly 13 to casing assembly 5, and remove cover. Then remove guide tube 9 and defective coil 8.
2. Positioning the lower insulating washer 6 in the bottom of the casing, line the inner wall with the strip 7, leaving grommet hole clear.
3. Holding new coil 8 above casing with leads pointing upwardly and in line with grommet, draw leads through grommet hole and lower coil into casing.
4. Press guide tube 9 down into position surrounding butt to center coil and insulating washer.
5. Replace cover assembly on casing and make secure.

K. TO DISASSEMBLE MANUAL OVER-RIDE

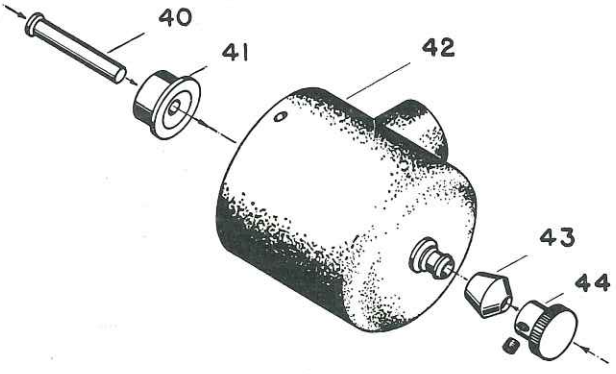
1. While cover assembly 13 is still secured to casing, wrap strip of shim stock or fine emery cloth about cap 17 and grip with pliers to loosen and remove.
2. Remove cover assembly from casing and work plunger 10 clear of retaining ring 15A on trip pin 15. Remaining parts are easily disassembled.

L. TO REASSEMBLE MANUAL OVER-RIDE

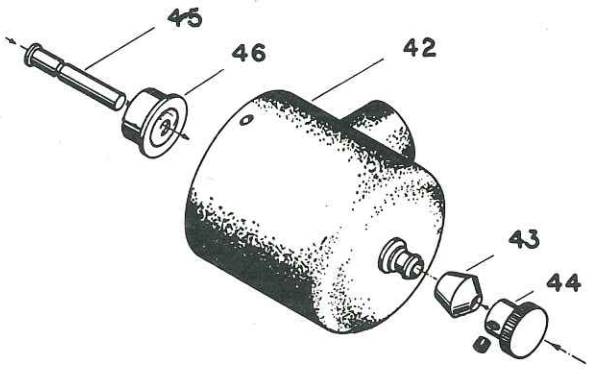
1. Place spring 14 in guide bore of cover 13, small end up. Then position trip pin 15 in spring and guide hole.
2. Assemble push button 16 with cap 17 and thread cap on cover guide.
3. Invert cover assembly with lower end of trip pin extending upwardly. Lubricate small O-Ring 15A and work into trip pin groove.
4. Drop bumper 11 into position surrounding trip pin. Then work retaining washer in plunger 10 over retaining ring 15A to loosely couple plunger and trip pin.
5. Replace cover assembly and make secure. Tighten cap on cover guide.



PARTS DRAWING
MODELS 1034,
1038 AND A-1038



MANUAL CONTROL
NON-LOCKING



MANUAL CONTRCL
LOCKING

MAIN VALVE PARTS

Part Code	No. Reqd.	Part Name	Part Number	List Price	Part Number	List Price	Part Number	List Price	Part Number	List Price
1	1	Closing Nut	10342-2	$2.25	10343-2	$ 2.25	10344-2	$ 2.90	10346-2	$ 3.60
1A	1	Lower Poppet Spring*	10382-26	.25	10383-26	.25	10384-26	.25	10386-26	.30
2	1	Assembly Stud	10342-3	1.40	10343-3	1.40	10344-3	1.40	10346-3	1.60
3	1	Valve Ring Retainer	10342-4	1.10	10343-4	1.20	10344-4	1.40	10346-4	1.80
4	2	Valve Ring (150 psi)	10342-5	.35	10343-5	.35	10344-5	.45	10346-5	.50
4	2	Valve Ring (500 psi)	10342-5A	1.25	10343-5A	1.25	10344-5A	1.80	10346-5A	2.40
5	2	Retaining Washer	10342-6	.20	10343-6	.20	10344-6	.25	10346-6	.28
6	1	Body: 1034	10342-1	8.75	10343-1	10.60	10344-1	11.45	10346-1	14.75
6B	1	Body: 1038 & A1038	10382-1	8.75	10383-1	10.60	10384-1	11.45	10386-1	14.75
7	1	Stem	10342-7	1.00	10343-7	1.10	10344-7	1.10	10346-7	1.40
8	1	Piston	10342-8	1.45	10343-8	1.45	10344-8	1.80	10346-8	2.80
9	1	Piston Outer Seal	10342-10	.26	10343-10	.26	10344-10	.27	10346-10	.28
10	1	Piston Inner Seal	10342-9	.25	10343-9	.25	10344-9	.25	10346-9	.26
11	2	Housing Bore Seal	10342-15	.26	10343-15	.26	10344-15	.27	10346-15	.28
12	1	Pilot Housing	10342-14	1.95	10343-14	1.95	10344-14	2.80	10346-14	3.20
21	1	Spacing Washer	10342-21	.23	10343-21	.23	10344-21	.24	10346-21	.36

*Lower Poppet Spring is used in 1038 and A1038, 1039 and A1039 models only..

PILOT VALVE PARTS

(Used on all sizes and models of 1034 series valves)

Part Code	No. Reqd.	Part Name	Part Number	List Price
13	3	Plunger Seal	1034-12	$ .23
14	1	Sleeve Seal	1034-13	.25
15	1	Exhaust Sleeve	1034-11	.30
16	1	O-Ring Retainer	1034-16	.20
17	2	Pilot Bore Seal	1034-17	.25
18	1	Pressure Sleeve	1034-18	.26
19	1	Plunger Guide	1034-19	.45
20	1	Snap Ring	1034-20	.10
22	1	Plunger Spring (AC)	1034-23	.15
22	1	Plunger Spring (DC)	1034-D23	.15
23	1	*Pilot Plunger, NC or NO	1034-22	1.30

*Specify whether Type NO or Type NC: For Example, 1034-22NO

COMPLETE SOLENOID

Size (Specify Voltage)	Part Number	List Price
Solenoid for ¼" or ⅜" Valves	21021	$17.35
Solenoid for ½" Valves	21022	17.95
Solenoid for ¾" Valves	21023	18.35

Note: Prices listed are for solenoids complete with 115V 60C coils. Check coil prices for additives. The "D" before the solenoid number indicates D.C. unit. For SPECIAL VOLTAGES, consult factory.

#2102 "MK" MANUAL OVER-RIDE ASSEMBLY

(1) Ordered as part of valve or solenoid: Non-Locking, $2.15 List Extra; Locking, $2.65 List Extra.

(2) Ordered Separately: Non-Locking, $5.30 List Extra; Locking, $5.80 List Extra.

NO. 2102 SOLENOID PARTS

Part Code	No. Reqd.	Part Name	Part Number	List Price
24	1	Contact Plunger	2102-2	.20
24	1	Contact Plunger	2102-R2	.20
25	1	Adapter (for 21021 Solenoid)	21021-1	$2.40
25	1	Adapter (for 21022 Solenoid)	21022-1	2.90
25	1	Adapter (for 21023 Solenoid)	21023-1	3.60
26	1	Butt-Flange Assembly	2102-3	2.80
27	1	Plunger (AC)	2102-8	1.45
27	1	Plunger (DC)	2102-D8	1.70
28	1	Guide Tube	2102-10	.90
29	2	Coil Sleeve	2102-4	.24
30	2	Insulating Washer	2102-5	.15
31	1	*Coil: 24-60	2102-9	4.70
31	1	*Coil: 115-60, 115-50	2102-9	4.70
31	1	*Coil: 230-60	2102-9	5.15
31	1	*Coil: 460-60	2102-9	5.55
31	1	*Coil: 6V DC	2102-9	6.65
31	1	*Coil: 12V DC	2102-9	7.10
31	1	*Coil: 24V DC	2102-9	7.35
32	1	Magnetic Washer	2102-11	.35
33	1	Assembly Spring	2102-13	.25
34	1	Bumper	2102-12	N/C
35	1	Tube Plug	2102-15	.65
36	1	Assembly Clip (with Screw)	2102-6	.15
37	1	Casing	2102-7	3.00
38	1	Name Plate	2102-16	N/C
39	1	Snap Button	2102-17	N/C
40	1	Trip Pin, Non-Locking	2082-39A	.30
41	1	Tube Plug, Non-Locking	2102-27	.70
42	1	Casing, "MK"	2102-23	3.50
43	1	Dust Cap	2082-36	.18
44	1	Knob & Set Screw	2082-40	.75
45	1	Trip Pin, Locking	2102-28	.35
46	1	Tube Plug, Locking	2102-19	1.10

*Price includes 2 insulating washers.
For SPECIAL VOLTAGES, consult factory.

A. TO DISASSEMBLE PILOT VALVE

1. If valve is connected to piping, shut off pressure and use bleed screw 6A or operate pilot valve to RELIEVE VALVE OF ALL INTERNAL PRESSURE.
2. Remove solenoid, lifting straight up. Remove plungers 24 and 23, and spring 22. Use 8-32 screw to withdraw pilot assembly from main bore.
3. Use Truarc Plier #1 or #21 to remove snap ring 20. Then parts 19 and 18 may be dropped out of pilot housing, and remaining parts may be pulled out with hooked wire.

B. TO REASSEMBLE PILOT VALVE

Note: Lubricate all O-Rings to facilitate assembly. A light paraffin base mineral oil is best. Replace any O-Ring that appears to be swollen, worn or damaged.

1. Assemble O-Rings 13 and 14 with sleeve 15 and bottom latter in bore of pilot housing 12.
2. Assemble a second O-Ring 13 with retainer 16 and drop into position, O-Ring up. Follow with an O-Ring 17 and press into groove. Install remaining parts as indicated in parts drawing.

C. TO DISASSEMBLE MAIN VALVE

1. Having removed solenoid and pilot valve assembly, also remove closing nut 1 from bottom of valve.
2. Use slot at upper rim of piston to hold piston against turning and hex socket wrench to loosen and remove stud 2. Parts 3, 4 and 5 may now be dropped out at lower end of valve while the remainder of poppet is pushed out through upper end.

D. TO REASSEMBLE MAIN VALVE

1. Inspect O-Ring 9 and replace if needed. Inspect rubber or Teflon valve rings 4 for damage or foreign matter imbedded in surface. Rubber rings may be reversed for additional service.
2. To reassemble poppet merely reverse disassembly procedure outlined above, drawing parts together snugly but without excessive torque force.

E. TO DISASSEMBLE 2102 SOLENOID

1. Press casing down firmly while loosening screws 36A. Pull gently on lead wires and tilt casing toward lead wires while lifting casing clear of other parts. Remaining parts may be removed easily.

F. TO REASSEMBLE SOLENOID

1. Press tube 28 down around butt on flange 26. (Plunger 24 is fitted into upper end of pilot plunger 23.) Drop plunger 27 into tube, contact button end down. Place bumper 34 on upper end of plunger.
2. Parts 29 to 35, inclusive, may now be loaded over guide tube in the order shown in the drawing. Coil leads should point upwardly.
3. Line lead wires up with one of the notches in washer 32 then string lead wires into casing and out through conduit fitting. Pull gently on lead wires while easing casing down into position around coil assembly. Press casing down firmly while tightening screws — evenly and not too tightly.

G. TROUBLE SHOOTING: PILOT VALVE

1. With adequate lubrication, pilot valve will seldom cause malfunctioning unless spring 22 breaks — a very rare occurrence. Excessive O-Ring swell could retard pilot plunger movement. Check "A" above.
2. Pilot valve leaks are difficult to check since pilot exhausts into main valve. Damage or excessive shrinkage would cause bore seals 17 to leak. Excessive wear would require replacement of plunger seals 13.
3. If pressure at main inlet drops below 20-30 psi when valve is operated to open inlet port, pilot starvation may be expected to cause faulty action. This is especially true if valve controls liquid fluid.

H. TROUBLE SHOOTING: MAIN VALVE

1. Most malfunctioning can be traced to inner piston seal 10 and to outer piston seal 9, particularly the latter. Lack of lubrication causes O-Ring drag. Excessive O-Ring swell can restrict piston movement. Excessive O-Ring shrinkage may cause fluid to leak past O-Ring 9 faster than pilot can exhaust it and poppet will not make up stroke.
2. If valve leaks at main exhaust with inlet port open, check O-Rings 9 and 11 and lower valve ring 4. If valve leaks with inlet port closed, check O-Ring 10 and upper valve ring 4.
3. If valve controls an unlubricated gaseous fluid, piston seals and pilot plunger seals must be hand lubricated periodically to assure normal operation.
4. If valve fails to operate properly when first installed, remove nut 1 and test poppet for free up-and-down movement.

Note: Various fluids, including hot water, cause O-Ring swell. Suitable O-Ring compounds are available.

J. TROUBLE SHOOTING: SOLENOID

1. With solenoid mounted normally on valve, energize coil. A distinct metallic click should indicate normal operation.
2. Otherwise, check for open circuit. Check power supply against coil rating. Check for burned-out coil. Make sure bumper is in place at upper end of solenoid plunger. After long service, check contact end of solenoid plunger for burr at outer edge which could restrict movement in guide tube.

POWER CONSUMPTION

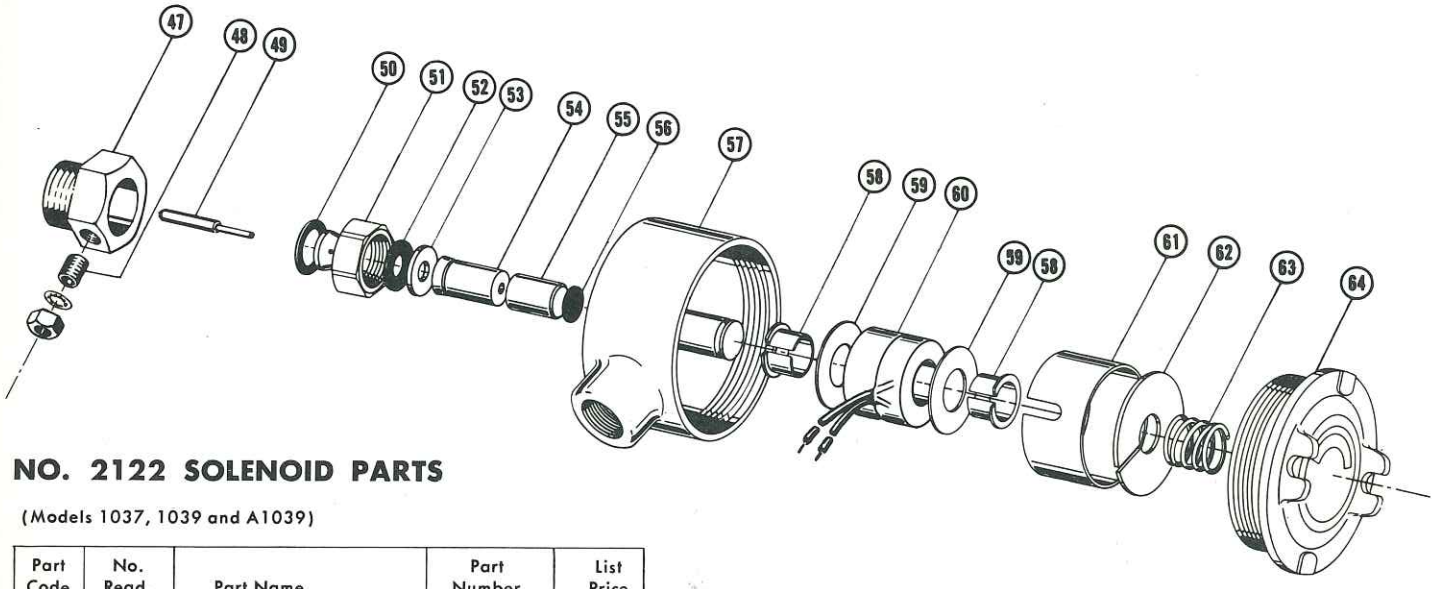
Solenoid	D.C. Watts	A.C. Watts	A.C. Volt Amperes	
			Inrush	Holding
D2102-2102	20	16	65	28
D2122-2122	18	16	70	30

To determine current in amperes, divide D.C. Watts by line voltage, A.C. Volt Amperes by line voltage.

SPARE PARTS AND PRICES FOR EXPLOSION PROOF SOLENOID (USED ON MODELS 1037, 1039, A1039)
MAIN VALVE PARTS FOR ABOVE ARE THE SAME AS MODELS 1034, 1038, A1038 RESPECTIVELY

MAIN VALVE PARTS

Part Code	No. Reqd.	Part Name	Part Numbers	List Price	Part Numbers	List Price	Part Numbers	List Price	Part Numbers	List Price
47	1	Valve Adapter	10372-24	$2.15	10372-24	$2.15	1037-24	$2.60	10376-24	$3.00
48	1	Set Screw, Washer and Nut	1037-26	.25	1037-26	.25	1037-26	.25	1037-26	.25
49	1	Spacing Plunger	1037-25	.50	1037-25	.50	1037-25	.50	1037-25	.50
49	1	Spacing Plunger	1037-R25	.50	1037-R25	.50	1037-R25	.50	1037-R25	.50



NO. 2122 SOLENOID PARTS

(Models 1037, 1039 and A1039)

Part Code	No. Reqd.	Part Name	Part Number	List Price
50	1	Gasket	2122-1	$ .10
51	1	Swivel Adapter	2122-2	3.00
52	1	Rubber Washer	2122-3	.10
53	1	Brass Washer	2122-4	.20
54	1	Butt (AC)	2122-5	2.25
54	1	Butt (DC)	2122-D5	2.75
55	1	Plunger	2122-11S	1.75
56	1	Bumper	2122-13	.10
57	1	Casing Assembly	2122-6	15.50
58	2	Coil Sleeve	2122-7	.25
59	2	Insulating Washer	2122-8	.12
60	1	*Coil: 24-60	2122-9	3.85
60	1	*Coil: 115-60, 115-50	2122-9	4.00
60	1	*Coil: 115-25	2122-9	4.35
60	1	*Coil: 230-60, 230-50	2122-9	4.35
60	1	*Coil: 230-25	2122-9	4.60
60	1	*Coil: 460-60, 460-50	2122-9	4.60
60	1	*Coil: 550-60	2122-9	4.60
60	1	*Coil: 6V DC	2122-9	6.00
60	1	*Coil: 12V DC	2122-9	6.30
60	1	*Coil: 24V DC	2122-9	7.05
61	1	Magnetic Sleeve	2122-10	.90
62	1	Magnetic Washer	2122-12	.30
63	1	Spring	2122-14	.25
64	1	Cover	2122-15	4.50

*Price includes 2 insulating washers.
For SPECIAL VOLTAGES, consult factory.

COMPLETE SOLENOID

No. 2122 Solenoid Complete $31.50

Note: 1. Price listed is for solenoid with 115-60 Coil. Check coil prices for additives. The number 2122 is used for A.C., D2122 for D.C. For SPECIAL VOLTAGES, consult factory.

2. Advise valve model solenoid is to operate.

SERVICE DATA: 2122 SOLENOID

K. TO CHANGE COIL

1. Remove cover 64 and parts 63, 62 and 61. The defective coil 60 may now be removed from guide tube. If it does not come freely, turn from side to side while pulling outwardly. In case of burned-out coil it may be necessary to insert screwdriver through casing outlet and pry coil outwardly.
2. To Install New Coil: With the lower coil sleeve 58 in position at base of guide tube, follow with an insulating washer, the coil, a second washer 59 and the upper coil sleeve. The coil leads should point inwardly and the ends should be drawn through the outlet opening while bottoming coil on guide tube. Parts 61, 62, 63 and 64 may now be replaced.

L. INNER GUIDE TUBE ASSEMBLY

1. The parts 51 to 56, inclusive, involved in the inner guide tube assembly, should not require attention short of many millions of cycles. Unless the need arises this assembly should be left undisturbed.
2. To Disassemble: Having removed the solenoid from valve adapter 47, loosen and remove swivel adapter 51 from connection at bottom of casing 57. An ordinary ⅜-16 bolt may now be used as a "puller" to withdraw butt 54 from tube. Then drop plunger 55 and bumper 56 out into hand.
3. To Reassemble: Invert casing 57 with guide tube opening pointed upwardly. Drop bumper 56 into bottom of tube and flatten. Follow with plunger 55 and butt 54, tapping latter lightly to seat in tapered guide. Then, with rubber washer 52 and brass washer 53 bottomed in well of adapter 51, thread latter onto connection at bottom of casing and draw up snugly.

M. TO ASSEMBLE WITH VALVE

1. With valve adapter 47 securely threaded into valve body, make sure that spacing plunger 49 is seated in upper end of pilot plunger. Then guide bore in adapter 51 down over plunger 49 while inserting shank of 51 into bore of 47. Be careful not to spring 49 out of pilot plunger.
2. Press down firmly on solenoid cover while tightening set screw against swivel adapter. Excessive torque force is not required when tightening screw.

A. TROUBLE: EXTERNAL LEAKAGE BETWEEN FITTINGS AND BODY

Possible Causes	Remedy
1. Loose fittings.	1. Tighten fitting bolts.
2. Damaged gasket.	2. Replace.
3. Damaged body or fitting.	3. Replace damaged part.
4. Bending stress due to plumbing and mounting.	4. Check pipes and mounting for normality.

B. TROUBLE: EXTERNAL LEAKAGE AT SHAFT ENDS

1. Worn or broken 'O' rings.	1. Replace.
2. Damaged slide.	2. Replace (if scratches or nicks are not excessive, slide ends may be polished with #600 grit paper).
3. Damaged groove in body or gland.	3. Replace.
4. Foreign matter dislodging 'O' ring seal.	4. Clean parts of all foreign elements.

C. TROUBLE: INTERNAL LEAKAGE IN EXCESS OF GUARANTEED AMOUNT

1. Damaged or worn 'O' rings around "Shear-Seal."	1. Replace.
2. Damaged bore in fittings (where 'O' ring is contained on "Shear-Seal").	2. Replace.
3. Damaged 'O' ring groove in fitting.	3. Replace.
4. Scratch on "Shear-Seal" lapped face.	4. Replace or relap.
5. Scratch on slide lapped faces.	5. Replace or relap.

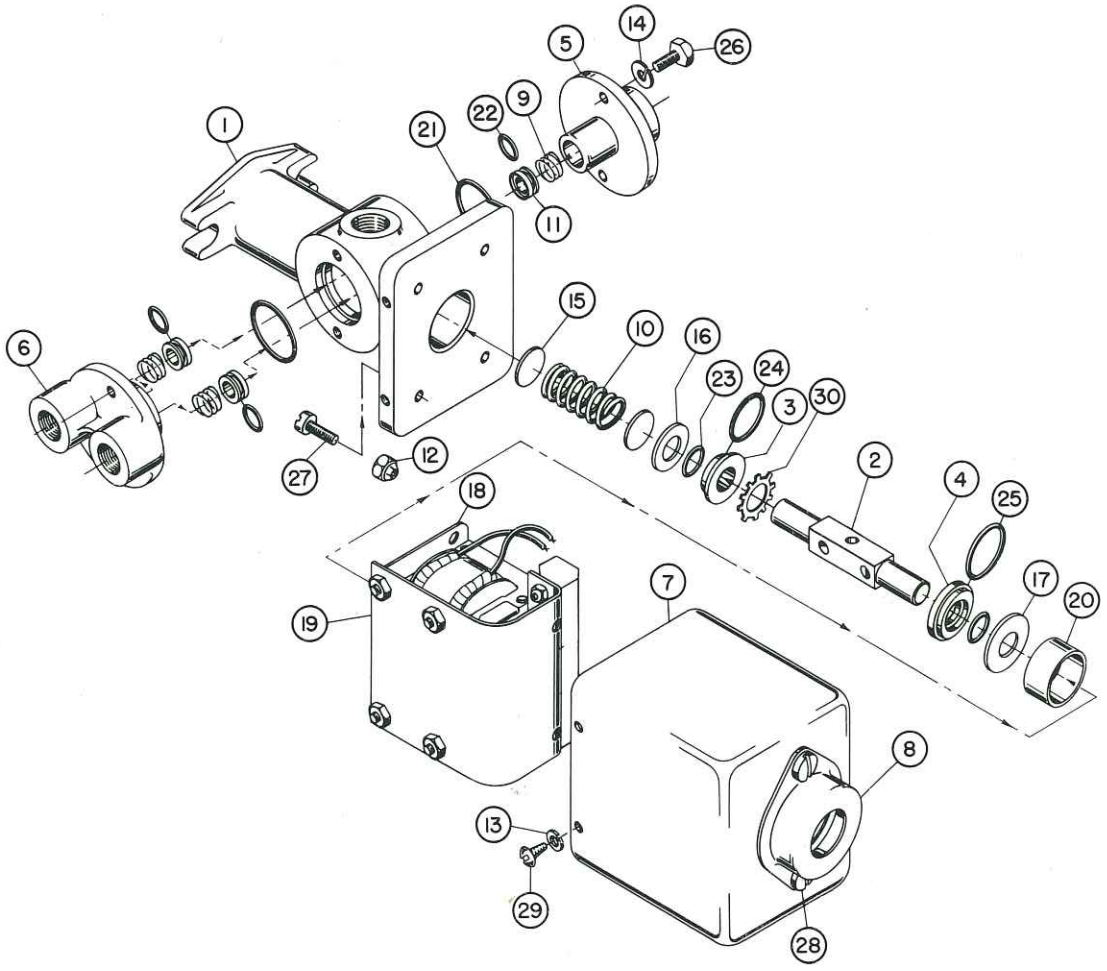
D. TROUBLE: VALVE FAILS TO ENERGIZE COMPLETELY OR RETURN

1. Voltage drop.	1. Check line voltage at solenoid and correct if low (consider all electrical equipment that may cause a momentary voltage drop at time of valve energization).
2. Excessive pressure.	2. Reduce pressure to insure rated pressure at all times.
3. Solenoid plunger sticking (mechanical bind).	3. Remove solenoid plunger and wipe or blow frame and plunger clean of any foreign matter. Check plunger in frame to insure its being loose and free.
4. Excessive galling (worn areas) on solenoid plunger.	4. Replace solenoid.
5. Over voltage (loss of dielectric strength with subsequent loss of power).	5. Replace coil.
6. Frictional increase. a. Excessive 'O' ring swell. b. Lack of lubrication. c. Galling between "Shear-Seal" and slide.	6. a. Consult factory for proper lubricant. b. Valve must be lubricated. c. Replace or relap. Note: Additional washers may be added under spring to increase its load when energization is satisfactory.

MAINTENANCE

1. Disassemble and inspect. Replace or repair damaged or worn parts and 'O' rings; clean all parts including solenoid and plunger. Grease valve parts before assembly. The solenoid should be cleaned at least every 1,000,000 cycles or every six months. The valve should be checked every 2,000,000 or once a year.
2. At the first sign of excessive internal leakage the valve should be disassembled and the source of leakage repaired.

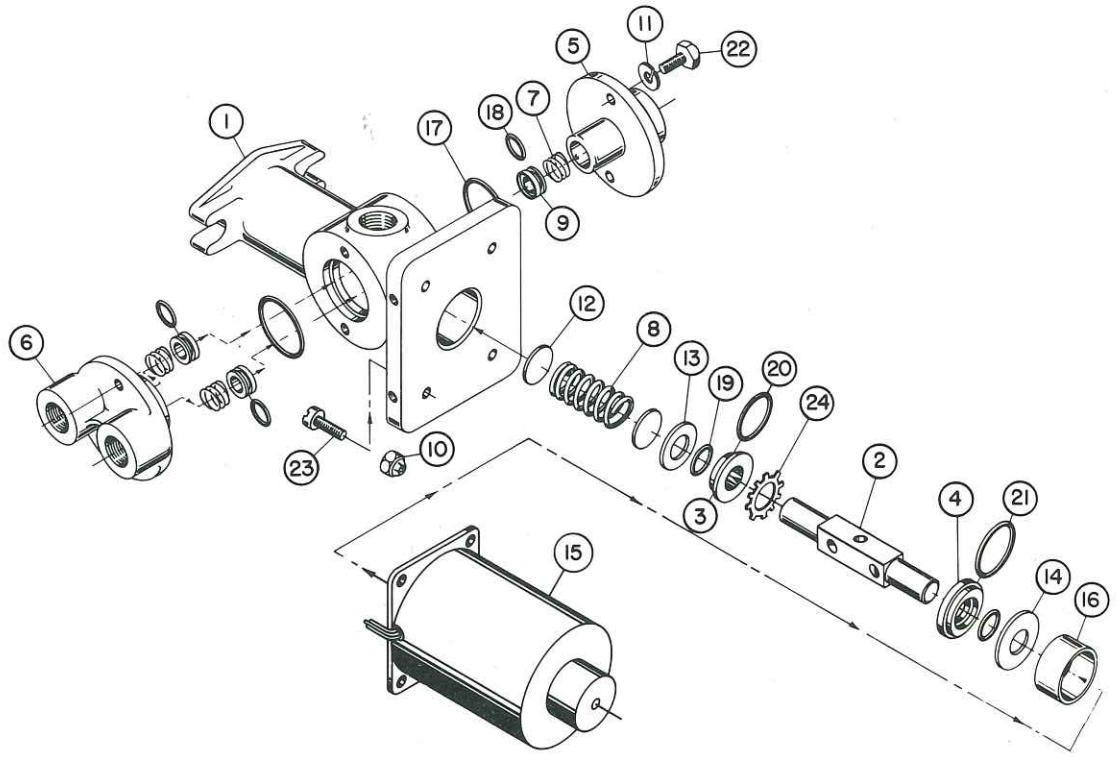
SPARE PARTS AND PRICES FOR DIRECT-SOLENOID 4-WAY VALVES (STANDARD A.C.)



Code No.	Description	Part No. for 1/4″ Valves Models: 1761SOAS2A1, 1761SOAS2A2, 1761SOAS2A4 — No. Req'd.		List Price	Part No. for 3/8″ Valves Models: 1762SOAS2A1, 1762SOAS2A2, 1762SOAS2A4 — No. Req'd.		List Price	Part No. for 1/2″ Valve Models: 1763SOAS2A1, 1763SOAS2A2, 1763SOAS2A4 — No. Req'd.		List Price
1	Body*	1	201109-A2	14.90	1	201110-A2	16.20	1	201110-A2	16.20
2	Slide	1	20214-C	10.40	1	20215-M	11.40	1	20215-M	11.40
3	Gland—Lower	1	20611	.90	1	20615	1.30	1	20615	1.30
4	Gland—Upper	1	20614	1.20	1	20612	1.10	1	20612	1.10
5	Fitting—Press*	1	20833-T1	3.20	1	20835-T1	5.50	1	20823-T1	7.10
6	Fitting—Cyl*	1	20832-T	7.60	1	20824-T2	9.90	1	20824-T3	9.90
7	Cover—Solenoid	1	21005	4.10	1	21005	4.10	1	21005	4.10
8	Cap—Conduit	1	21204	.50	1	21204	.50	1	21204	.50
9	Spring—Shear Seal	3	21310	.20	3	21341	.10	3	21341	.10
10	Spring—Return	1	21355	.40	1	21344	.90	1	21344	.90
11	Shear—Seal	3	21438	.90	3	21435	1.00	3	21435	1.00
12	Nut—Solenoid Mounting Screw	4	22301-3	.10	4	22301-3	.10	4	22301-3	.10
13	Washer—Cover Screw Lock	3	22502-2	.10	3	22502-2	.10	3	22502-2	.10
14	Washer—Fitting Screw Lock	4	22502-4	.10	8	22502-4	.10	8	22502-4	.10
15	Washer—Return Spring	2	22520-1	.10	2	22520-2	.10	2	22520-2	.10
16	Washer—Lower Gland	1	22527-1	.40	1	22527-3	.50	1	22527-3	.50
17	Washer—Upper Gland	1	22527-2	.40	1	22527-4	.60	1	22527-4	.60
18	Solenoid (Used on 2A1 only)	1	22811-1	13.90	1	22812-1	17.40	1	22812-1	17.40
18	Solenoid (Used on 2A2 only)	1	22811-2	13.90	1	22812-2	17.40	1	22812-2	17.40
18	Solenoid (Used on 2A4 only)	1	22811-4	13.90	1	22812-4	17.40	1	22812-4	17.40
19	Bracket Assembly	1	31804	5.50	1	31804	5.50	1	31804	5.50
20	Sleeve	1	23709	.70	1	23710	.80	1	23710	.80
21	"O" Ring—Fitting	2	25141-24	.80	2	PRP568-030	.40	2	PRP568-030	.40
22	"O" Ring—Shear Seal	3	25101-6	.20	3	25101-10	.20	3	25101-10	.20
23	"O" Ring—Slide	2	25101-8	.30	2	25101-9	.20	2	25101-9	.20
24	"O" Ring—Lower Gland	1	25105-12	.30	1	25105-17	.30	1	25105-17	.30
25	"O" Ring—Upper Gland	1	25101-15	.30	1	25101-21	.30	1	25101-21	.30
26	Screw—Fitting	4	25618-4-10	.10	8	25618-4-14	.10	8	25618-4-14	.10
27	Screw—Solenoid Mounting (Fillister)	4	#10-32x5/8 Lg.	.10	4	#10-32x5/8 Lg.	.10	4	#10-32x5/8 Lg.	.10
28	Screw—Conduit Cap	2	#12x3/8 Lg.	.10	2	#12x3/8 Lg.	.10	2	#12x3/8 Lg.	.10
29	Screw—Solenoid Cover	3	#8-32 x3/8 Lg.	.10	3	#8-32x3/8 Lg.	.10	3	#8-32x3/8 Lg.	.10
30	Retaining Ring—Gland	1	5005-87MF	.10	1	5005-125MF	.10	1	5005-125MF	.10

*For 1/4, 3/8, 1/2″ tube add (AND) to number. Price on request.

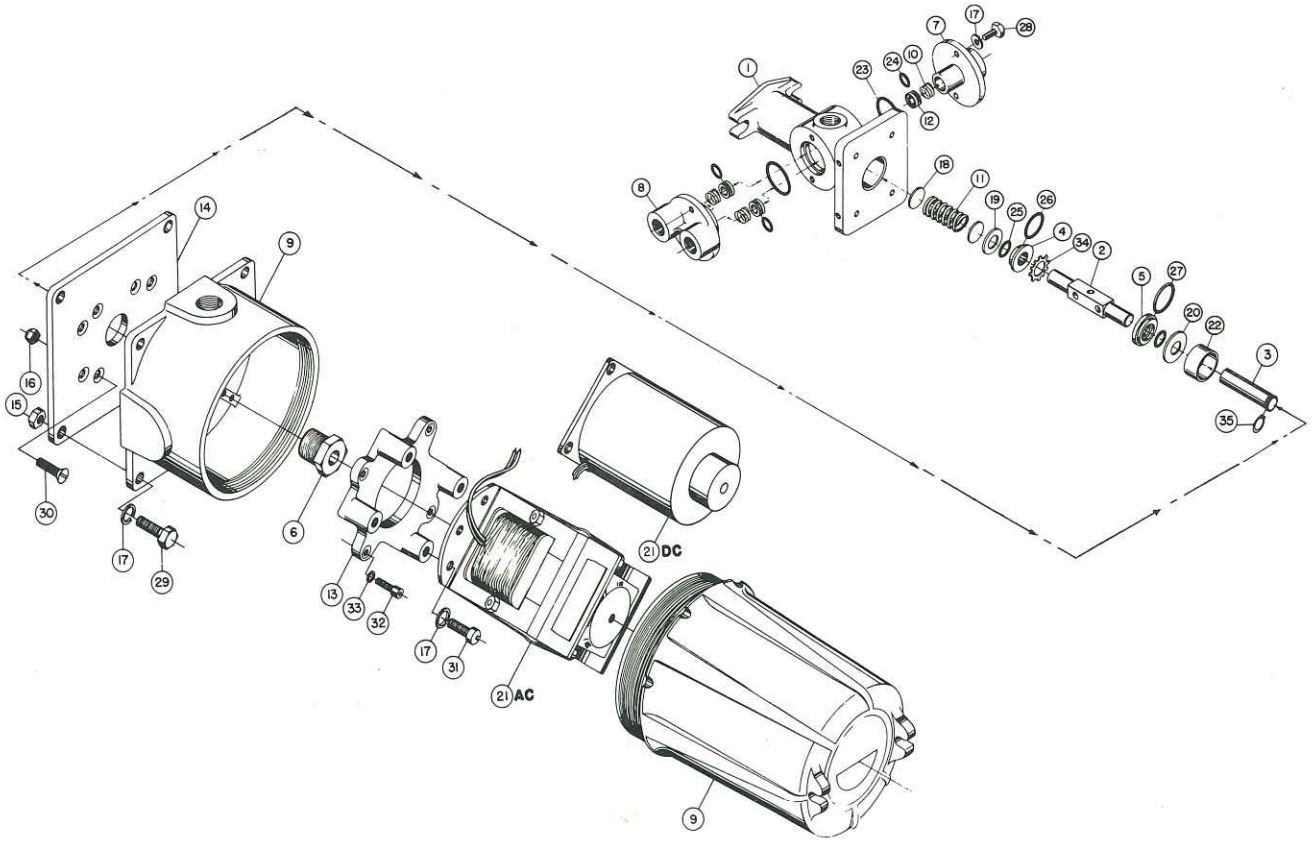
SPARE PARTS AND PRICES FOR DIRECT-SOLENOID 4-WAY VALVES (STANDARD D.C.)



Code No.	Description	Part No. for 1/4" Valves Models: 1761SOAS2D2, 1761SOAS2D3, 1761SOAS2D4 — No. Req'd.		List Price	Part No. for 3/8" Valves Models: 1762SOAS2D2, 1762SOAS2D3, 1762SOAS2D4 — No. Req'd.		List Price	Part No. for 1/2" Valves Models: 1763SOAS2D2, 1763SOAS2D3, 1763SOAS2D4 — No. Req'd.		List Price
1	Body*	1	201109-A2	14.90	1	201110-A2	16.20	1	201110-A2	16.20
2	Slide	1	20214-C	10.40	1	20215-M	11.40	1	20215-M	11.40
3	Gland—Lower	1	20611	.90	1	20615	1.30	1	20615	1.30
4	Gland—Upper	1	20614	1.20	1	20612	1.10	1	20612	1.10
5	Fitting—Press*	1	20833-T1	3.20	1	20835-T1	5.50	1	20823-T1	7.10
6	Fitting—Cyl*	1	20832-T	7.60	1	20824-T2	9.90	1	20824-T3	9.90
7	Spring—Shear Seal	3	21310	.20	3	21341	.10	3	21341	.10
8	Spring—Return	1	21355	.40	1	21344	.90	1	21344	.90
9	Shear—Seal	3	21438	.90	3	21435	1.00	3	21435	1.00
10	Nut—Solenoid Mounting Screw	4	22301-3	.10	4	22301-3	.10	4	22301-3	.10
11	Washer—Fitting Screw Lock	4	22502-4	.10	8	22502-4	.10	8	22502-4	.10
12	Washer—Return Spring	2	22520-1	.10	2	22520-2	.10	2	22520-2	.10
13	Washer—Lower Gland	1	22527-1	.40	1	22527-3	.50	1	22527-3	.50
14	Washer—Upper Gland	1	22527-2	.40	1	22527-4	.60	1	22527-4	.60
15	Solenoid (Used on 2D2 only)	1	22822-2	45.00	1	22822-2	45.00	1	22822-2	45.00
15	Solenoid (Used on 2D3 only)	1	22822-3	33.60	1	22822-3	33.60	1	22822-3	33.60
15	Solenoid (Used on 2D4 only)	1	22822-4	38.00	1	22822-4	38.00	1	22822-4	38.00
16	Sleeve	1	23709	.70	1	23710	.80	1	23710	.80
17	"O" Ring—Fitting	2	25141-24	.80	2	PRP568-030	.40	2	PRP568-030	.40
18	"O" Ring—Shear Seal	3	25101-6	.20	3	25101-10	.20	3	25101-10	.20
19	"O" Ring—Slide	2	25101-8	.30	2	25101-9	.20	2	25101-9	.20
20	"O" Ring—Lower Gland	1	25105-12	.30	1	25105-17	.30	1	25105-17	.30
21	"O" Ring—Upper Gland	1	25101-15	.30	1	25101-21	.30	1	25101-21	.30
22	Screw—Fitting	4	25618-4-10	.10	8	25618-4-14	.10	8	25618-4-14	.70
23	Screw—Solenoid Mounting (Fillister)	4	#10-32x3/4 Lg.	.10	4	#10-32x3/4 Lg.	.10	4	#10-32x3/4 Lg.	.10
24	Retaining Ring—Gland	1	5005-87MF	.10	1	5005-125MF	.10	1	5005-125MF	.10

*For 1/4, 3/8, 1/2" tube add (AND) to number. Price on request.

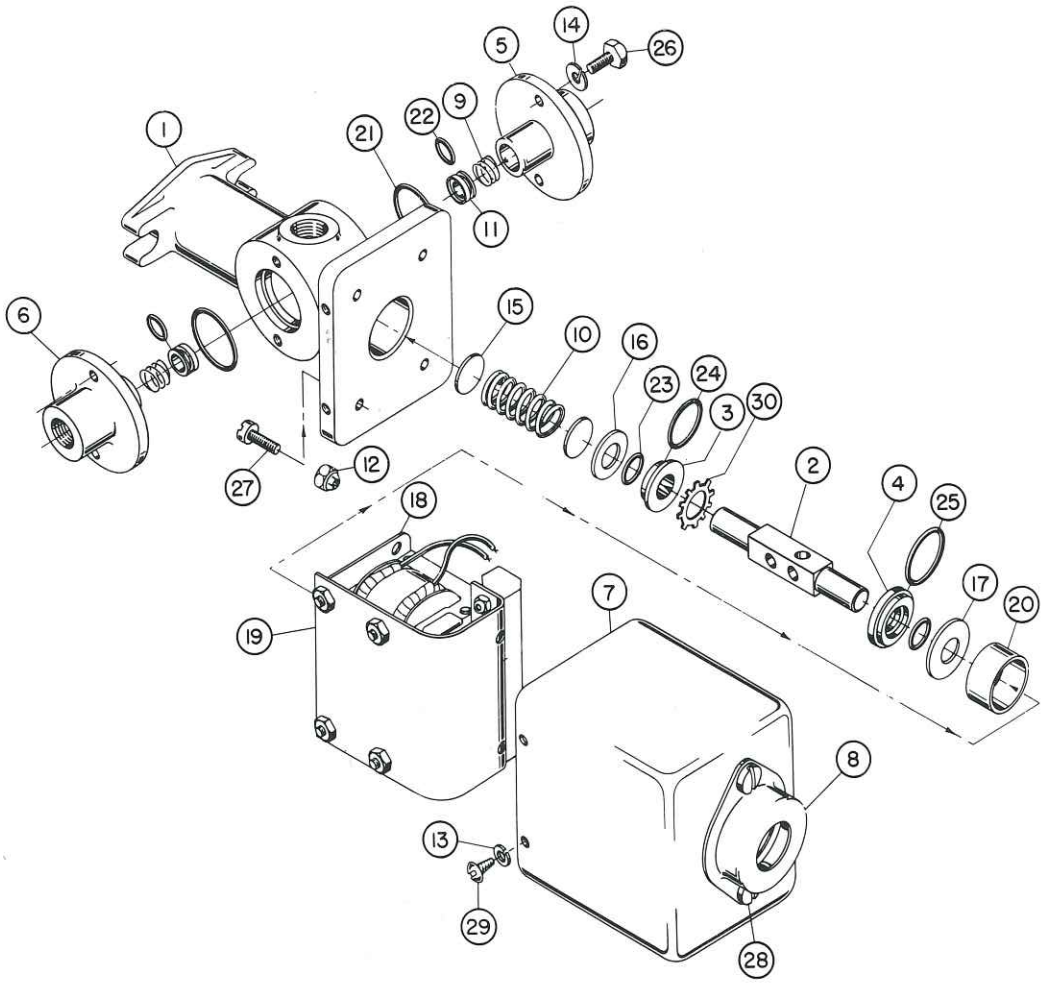
SPARE PARTS AND PRICES FOR DIRECT-SOLENOID 4-WAY VALVES (EXPLOSION PROOF A.C.) (EXPLOSION PROOF D.C.)



Code No.	Description	Part No. for 1/4" Valves Models: X1761SOAS2A1, X1761SOAS2A2, X1761SOAS2A4, X1761SOAS2D2, X1761SOAS2D3, X1761SOAS2D4			Part No. for 3/8" Valves Models: X1762SOAS2A1, X1762SOAS2A2, X1762SOAS2A4, X1762SOAS2D2, X1762SOAS2D3, X1762SOAS2D4			Part No. for 1/2" Valves Models: X1763SOAS2A1, X1763SOAS2A2, X1763SOAS2A4, X1763SOAS2D2, X1763SOAS2D3, X1763SOAS2D4		
		No. Req'd.		List Price	No. Req'd.		List Price	No. Req'd.		List Price
1	Body*	1	201109-A2	14.90	1	201110-A2	16.20	1	201110-A2	16.20
2	Slide	1	20214-C	10.40	1	20215-M	11.40	1	20215-M	11.40
3	Rod	1	20508	2.00	1	20508	2.00	1	20508	2.00
4	Gland—Lower	1	20611	.90	1	20615	1.30	1	20615	1.30
5	Gland—Upper	1	20614	1.20	1	20612	1.10	1	20612	1.10
6	Gland—Solenoid Cover	1	20621	2.20	1	20621	2.20	1	20621	2.20
7	Fitting—Press*	1	20833-T1	3.20	1	20835-T1	5.50	1	20823-T1	7.10
8	Fitting—Cyl.	1	20832-T1	7.60	1	20824-T2	9.90	1	20824-T3	9.90
9	Cover—Solenoid A.C.	1	21008-1	44.00	1	21008-1	44.00	1	21008-1	44.00
9	Cover—Solenoid D.C.	1	21008-1	44.00	1	21008-1	44.00	1	21008-1	44.00
10	Spring—Shear Seal	2	21310	.20	1	21341	.10	1	21341	.10
11	Spring—Return A.C.	1	21351	1.40	1	21344	.90	1	21344	.90
11	Spring—Return D.C.	1	21355	.40	1	21344	.90	1	21344	.90
12	Shear Seal	2	21438	.90	1	21435	1.00	1	21435	1.00
13	Bracket	1	21827	5.20	1	21827	5.20	1	21827	5.20
14	Adaptor plate	1	21828	5.50	1	21828	5.50	1	21828	5.50
15	Nut—Solenoid Cover Screw	4	22308-4	.10	4	22308-4	.10	4	22308-4	.10
16	Nut—Adaptor Plate Screw	4	22301-3	.10	4	22301-3	.10	4	22301-3	.10
17	Washer—Solenoid Cover	12	22517-4	.10	16	22517-4	.10	16	22517-4	.10
18	Washer—Return Spring	7	22520-1	.10	2	22520-2	.10	2	22520-2	.10
19	Washer (Gland—Lower)	1	22527-1	.40	1	22527-3	.50	1	22527-3	.50
20	Washer (Gland—Upper)	1	22527-2	.40	1	22527-4	.60	1	22527-4	.60
21	Solenoid (Used on 2A1 only) A.C.	1	22825-1	31.00	1	22825-1	31.00	1	22825-1	31.00
21	Solenoid (Used on 2A2 only) A.C.	1	22825-2	31.00	1	22825-2	31.00	1	22825-2	31.00
21	Solenoid (Used on 2A4 only) A.C.	1	22825-4	31.00	1	22825-4	31.00	1	22825-4	31.00
21	Solenoid (Used on 2D2 only) D.C.	1	22823-2	45.00	1	22823-2	45.00	1	22823-2	45.00
21	Solenoid (Used on 2D3 only) D.C.	1	22823-3	33.60	1	22823-3	33.60	1	22823-3	33.60
21	Solenoid (Used on 2D4 only) D.C.	1	22823-4	38.00	1	22823-4	38.00	1	22823-4	38.00
22	Sleeve	1	23709	.70	1	23710	.80	1	23710	.80
23	"O" Ring—Fitting	2	25141-24	.80	2	PRP568-030	.40	2	PRP568-030	.40
24	"O" Ring—Shear Seal	2	25101-6	.20	1	25101-10	.20	1	25101-10	.20
25	"O" Ring—Slide	2	25101-8	.30	2	25101-9	.20	2	25101-9	.20
26	"O" Ring—Lower Gland	1	25105-12	.30	1	25105-17	.30	1	25105-17	.30
27	"O" Ring—Upper Gland	1	25101-15	.30	1	25101-21	.30	1	25101-21	.30
28	Screw—Fitting	4	25618-4-10	.10	8	25618-4-14	.10	8	25618-4-14	.10
29	Screw—Solenoid Cover	4	25618-4-14	.10	4	25618-4-14	.10	4	25618-4-14	.10
30	Screw—Flat Hd. Mach. 82° Adaptor Plate	4	#10-32x3/4 Lg.	.10	4	#10-32x3/4 Lg.	.10	4	#10-32x3/4 Lg.	.10
31	Screw—Solenoid	4	25618-4-8	.10	4	25618-4-8	.10	4	25618-4-8	.10
32	Screw—Bracket	4	#8-32x3/4 Lg.	.20	4	#8-32x3/4 Lg.	.20	4	#8-32x3/4 Lg.	.20
33	Washer—Bracket	4	#8	.10	4	#8	.10	4	#8	.10
34	Retaining Ring (Lower Gland)	1	#5005-87MF	.10	1	#5005-125MF	.10	1	#5005-125MF	.10
35	Retaining Ring—Rod	1	#5100-43	.10	1	#5100-43	.10	1	#5100-43	.10

*For 1/4, 3/8, 1/2" tube add (AND) to number. Price on request.

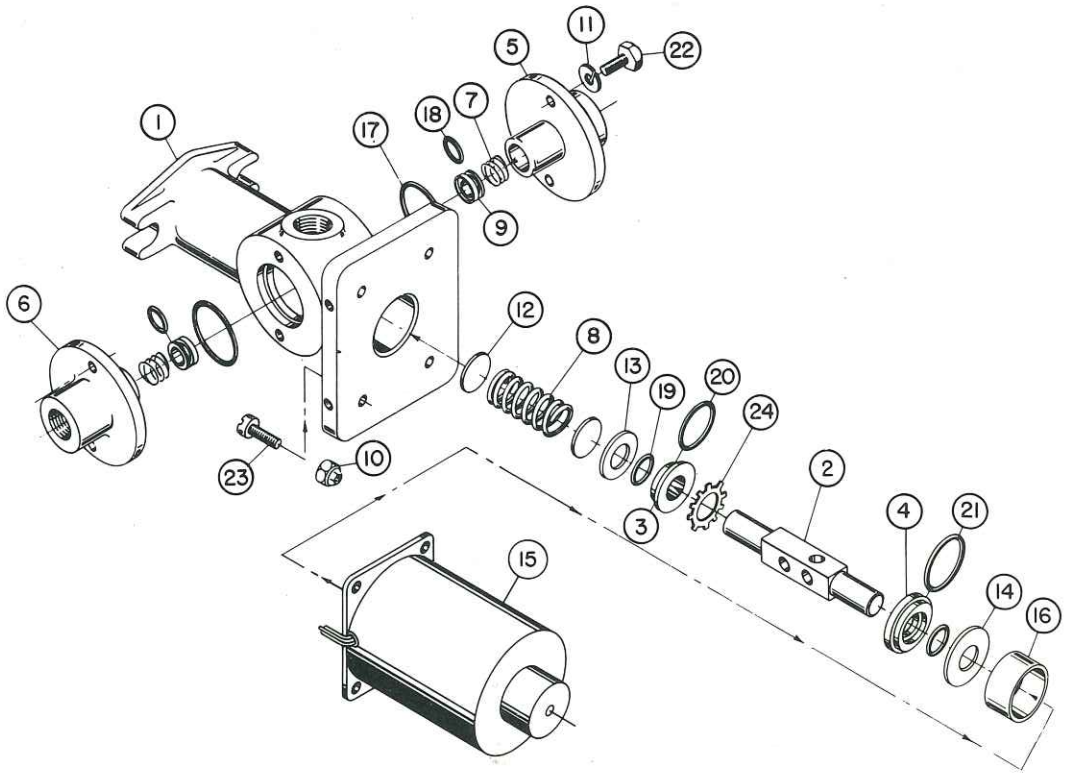
SPARE PARTS AND PRICES FOR DIRECT-SOLENOID 3-WAY VALVES (STANDARD A.C.)



Code No.	Description	Part No. for 1/4" Valves Models: 1781SOAO2A1, 1781SOAC2A1, 1781SOAO2A2, 1781SOAC2A2, 1781SOAO2A4, 1781SOAC2A4			Part No. for 3/8" Valves Models: 1782SOAO2A1, 1782SOAC2A1, 1782SOAO2A2, 1782SOAC2A2, 1782SOAO2A4, 1782SOAC2A4			Part No. for 1/2" Valves Models: 1783SOAO2A1, 1783SOAC2A1, 1783SOAO2A2, 1783SOAC2A2, 1783SOAO2A4, 1783SOAC2A4		
		No. Req'd.		List Price	No. Req'd.		List Price	No. Req'd.		List Price
1	Body*	1	201109-A2	14.90	1	201110-A2	16.20	1	201110-A2	16.20
2	Slide	1	20217	8.90	1	20216	10.60	1	20216	10.60
3	Gland—Lower	1	20611	.90	1	20615	1.30	1	20615	1.30
4	Gland—Upper	1	20614	1.20	1	20612	1.10	1	20612	1.10
5	Fitting—Press*	1	20833-T1	3.20	1	20835-T1	5.50	1	20823-T1	7.10
6	Fitting—Cyl.*	1	20833-T2	4.60	1	20835-T2	6.00	1	20823-T2	7.30
7	Cover—Solenoid	1	21005	4.10	1	21005	4.10	1	21005	4.10
8	Cap—Conduit	1	21204	.50	1	21204	.50	1	21204	.50
9	Spring—Shear-Seal	2	21310	.20	2	21341	.10	2	21341	.10
10	Spring—Return (Normally Open only)	1	21351	1.40						
10	Spring—Return (Normally Closed only)	1	21355	.40						
10	Spring—Return				1	21344	.90	1	21344	.90
11	Shear—Seal	2	21438	.90	2	21435	1.00	2	21435	1.00
12	Nut—Solenoid Mounting Screw	4	22301-3	.10	4	22301-3	.10	4	22301-3	.10
13	Washer—Cover Screw Lock	3	22502-2	.10	3	22502-2	.10	3	22502-2	.10
14	Washer—Fitting Screw Lock	4	22502-4	.10	8	22502-4	.10	8	22502-4	.10
15	Washer—Return Spring	2	22520-1	.10	2	22520-2	.10	2	22520-2	.10
16	Washer—Lower Gland	1	22527-1	.40	1	22527-3	.50	1	22527-3	.50
17	Washer—Upper Gland	1	22527-2	.40	1	22527-4	.60	1	22527-4	.60
18	Solenoid (Used on 2A1 only)	1	22811-1	13.90	1	22812-1	17.40	1	22812-1	17.40
18	Solenoid (Used on 2A2 only)	1	22811-2	13.90	1	22812-2	17.40	1	22812-2	17.40
18	Solenoid (Used on 2A4 only)	1	22811-4	13.90	1	22812-4	17.40	1	22812-4	17.40
19	Bracket Assembly—Solenoid	1	31804	5.50	1	31804	5.50	1	31804	5.50
20	Sleeve	1	23709	.70	1	23710	.80	1	23710	.80
21	"O" Ring—Fitting	2	25141-24	.80	2	PRP568-030	.40	2	PRP568-030	.40
22	"O" Ring—Shear Seal	2	25101-6	.20	2	25101-10	.20	2	25101-10	.20
23	"O" Ring—Slide	2	25101-8	.30	2	25101-9	.20	2	25101-9	.20
24	"O" Ring—Lower Gland	1	25105-12	.30	1	25105-17	.30	1	25105-17	.30
25	"O" Ring—Upper Gland	1	25101-15	.30	1	25101-21	.30	1	25101-21	.30
26	Screw—Fitting	4	25618-4-10	.10	8	25618-4-14	.10	8	25618-4-14	.10
27	Screw—Solenoid Mounting	4	#10-32x5/8 Lg.	.10	4	#10-32x5/8 Lg.	.10	4	#10-32x5/8 Lg.	.10
28	Screw—Conduit Cap	2	#12x3/8 Lg.	.10	2	#12x3/8 Lg.	.10	2	#12x3/8 Lg.	.10
29	Screw—Solenoid Cover	3	#8-32x3/8 Lg.	.10	3	#8-32x3/8 Lg.	.10	3	#8-32x3/8 Lg.	.10
30	Retaining Ring—Gland	1	5005-87MF	.10	1	5005-125MF	.10	1	5005-125MF	.10

*For 1/4, 3/8, 1/2" tube add (AND) to number. Price on request.

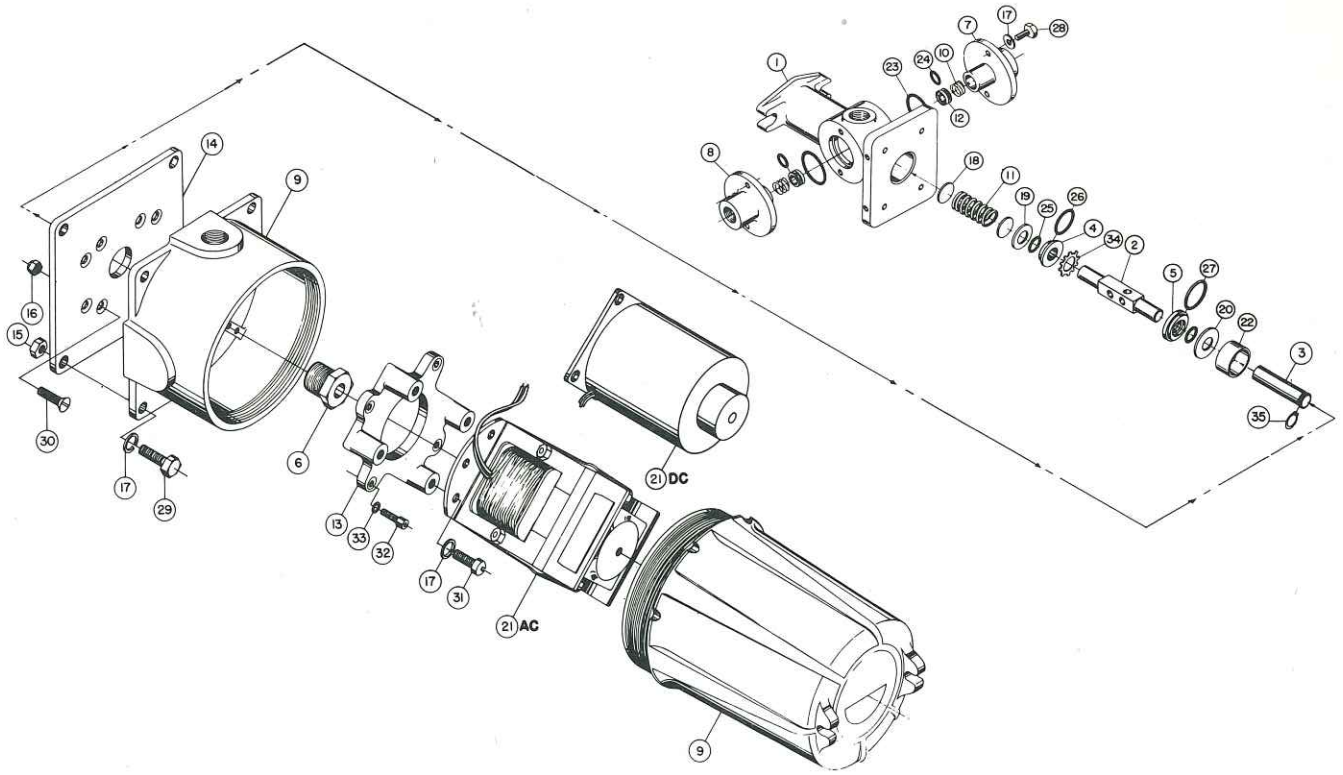
SPARE PARTS AND PRICES FOR DIRECT-SOLENOID 3-WAY VALVES (STANDARD D.C.)



Code No.	Description	Part No. for 1/4" Valves Models: 1781SOAO2D2, 1781SOAC2D2, 1781SOAO2D3, 1781SOAC2D3, 1781SOAO2D4, 1781SOAC2D4 — No. Req'd.		List Price	Part No. for 3/8" Valves Models: 1782SOAO2D2, 1782SOAC2D2, 1782SOAO2D3, 1782SOAC2D3, 1782SOAO2D4, 1782SOAC2D4 — No. Req'd.		List Price	Part No. for 1/2" Valves Models: 1783SOAO2D2, 1783SOAC2D2, 1783SOAO2D3, 1783SOAC2D3, 1783SOAO2D4, 1783SOAC2D4 — No. Req'd.		List Price
1	Body*	1	201109-A2	14.90	1	201110-A2	16.20	1	201110-A2	16.20
2	Slide	1	20217	8.90	1	20216	10.60	1	20216	10.60
3	Gland—Lower	1	20611	.90	1	20615	1.30	1	20615	1.30
4	Gland—Upper	1	20614	1.20	1	20612	1.10	1	20612	1.10
5	Fitting—Press*	1	20833-T1	3.20	1	20835-T1	5.50	1	20823-T1	7.10
6	Fitting—Cyl.*	1	20833-T2	4.60	1	20835-T2	6.00	1	20823-T2	7.30
7	Spring—Shear-Seal	2	21310	.20	2	21341	.10	2	21341	.10
8	Spring—Return (Normally Open only)	1	21351	1.40						
8	Spring—Return (Normally Closed only)	1	21355	.40						
8	Spring—Return				1	21344	.90	1	21344	.90
9	Shear—Seal	2	21438	.90	2	21435	1.00	2	21435	1.00
10	Nut—Solenoid Mounting Screw	4	22301-3	.10	4	22301-3	.10	4	22301-3	.10
11	Washer—Fitting Screw Lock	4	22502-4	.10	3	22502-4	.10	3	22502-4	.10
12	Washer—Return Spring	2	22520-1	.10	2	22520-2	.10	2	22520-2	.10
13	Washer—Lower Gland	1	22527-1	.40	1	22527-3	.50	1	22527-3	.50
14	Washer—Upper Gland	1	22527-2	.40	1	22527-4	.60	1	22527-4	.60
15	Solenoid (Used on 2D2 only)	1	22822-2	45.00	1	22822-2	45.00	1	22822-2	45.00
15	Solenoid (Used on 2D3 only)	1	22822-3	33.60	1	22822-3	33.60	1	22822-3	33.60
15	Solenoid (Used on 2D4 only)	1	22822-4	38.00	1	22822-4	38.00	1	22822-4	38.00
16	Sleeve	1	23709	.70	1	23710	.80	1	23710	.80
17	"O" Ring—Fitting	2	25141-24	.80	2	PRP568-030	.40	2	PRP568-030	.40
18	"O" Ring—Shear Seal	2	25101-6	.20	2	25101-10	.20	2	25101-10	.20
19	"O" Ring—Slide	2	25101-8	.30	2	25101-9	.20	2	25101-9	.20
20	"O" Ring—Lower Gland	1	25105-12	.30	1	25105-17	.30	1	25105-17	.30
21	"O" Ring—Upper Gland	1	25101-15	.30	1	25101-21	.30	1	25101-21	.30
22	Screw—Fitting	4	25618-4-10	.10	8	25618-4-14	.10	8	25618-4-14	.10
23	Screw—Solenoid Mounting	4	#10-32x3/4 Lg.	.10	4	#10-32x3/4 Lg.	.10	4	#10-32x3/4 Lg.	.10
24	Retaining Ring—Gland	1	5005-87MF		1	5005-125MF	.10	1	5005-125MF	.10

*For 1/4, 3/8, 1/2" tube add (AND) to number. Price on request.

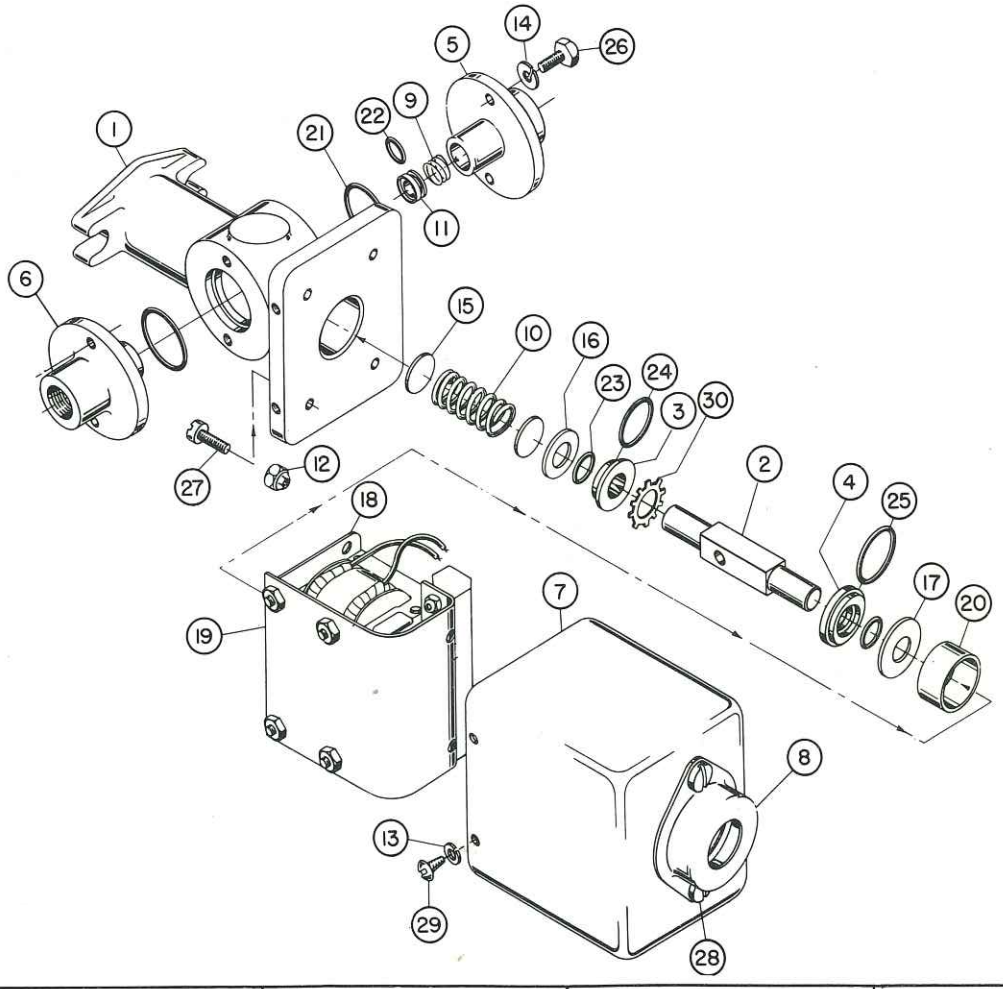
SPARE PARTS AND PRICES FOR DIRECT-SOLENOID 3-WAY VALVES (EXPLOSION PROOF A.C.) (EXPLOSION PROOF D.C.)



Code No.	Description	Part No. for 1/4" Valves Models: X1781SOAO2A1, X1781SOAO2A2, X1781SOAO2A4, X1781SOAC2A1, X1781SOAC2A2, X1781SOAC2A4, X1781SOAO2D2, X1781SOAO2D3, X1781SOAO2D4, X1781SOAC2D2, X1781SOAC2D3, X1781SOAC2D4			Part No. for 3/8" Valves Models: X1782SOAO2A1, X1782SOAO2A2, X1782SOAO2A4, X1782SOAC2A1, X1782SOAC2A2, X1782SOAC2A4, X1782SOAO2D2, X1782SOAO2D3, X1782SOAO2D4, X1782SOAC2D2, X1782SOAC2D3, X1782SOAC2D4			Part No. for 1/2" Valves Models: X1783SOAO2A1, X1783SOAO2A2, X1783SOAO2A4, X1783SOAC2A1, X1783SOAC2A2, X1783SOAC2A4, X1783SOAO2D2, X1783SOAO2D3, X1783SOAO2D4, X1783SOAC2D2, X1783SOAC2D3, X1783SOAC2D4		
		No. Req'd.		List Price	No. Req'd.		List Price	No. Req'd.		List Price
1	Body	1	201109-A2	$14.90	1	201110-A2	$16.20	1	201110-A2	$16.20
2	Slide	1	20217	8.90	1	20216	10.60	1	20216	10.60
3	Rod	1	20508	2.00	1	20508	2.00	1	20508	2.00
4	Gland—Lower	1	20611	.90	1	20615	1.30	1	20615	1.30
5	Gland—Upper	1	20614	1.20	1	20612	1.10	1	20612	1.10
6	Gland—Solenoid Cover	1	20621	2.20	1	20621	2.20	1	20621	2.20
7	Fitting—Press.*	1	20833-T1	3.20	1	20835-T1	5.50	1	20823-T1	7.10
8	Fitting—Cyl*	1	20833-T2	4.60	1	20835-T2	6.00	1	20823-T2	7.30
9	Cover—Solenoid A.C.	1	21008-1	44.00	1	21008-1	44.00	1	21008-1	44.00
9	Cover—Solenoid D.C.	1	21008-1	44.00	1	21008-1	44.00	1	21008-1	44.00
10	Spring—Shear Seal	2	21310	.20	1	21341	.10	1	21341	.10
11	Spring—Return A.C.	1	21351	1.40	1	21344	.90	1	21344	.90
11	Spring—Return D.C.	1	21351	1.40	1	21344	.90	1	21344	.90
12	Shear—Seal	2	21438	.90	1	21435	1.00	1	21435	1.00
13	Bracket	1	21827	5.20	1	21827	5.20	1	21827	5.20
14	Adapter Plate	1	21828	5.50	1	21828	5.50	1	21828	5.50
15	Nut—Solenoid Cover Screw	4	22308-4	.10	4	22308-4	.10	4	22308-4	.10
16	Nut—Adaptor Plate Screw	4	22301-3	.10	4	22301-3	.10	4	22301-3	.10
17	Washer	12	22517-4	.10	16	22517-4	.10	6	22517-4	.10
18	Washer—Return Spring	7	22520-1	.10	2	22520-2	.10	2	22520-2	.10
19	Washer (Gland—Lower)	1	22527-1	.40	1	22527-3	.50	1	22527-3	.50
20	Washer (Gland—Upper)	1	22527-2	.40	1	22527-4	.60	1	22527-4	.60
21	Solenoid (Used on 2A1 only) A.C.	1	22825-1	31.00	1	22825-1	31.00	1	22825-1	31.00
21	Solenoid (Used on 2A2 only) A.C.	1	22825-2	31.00	1	22825-2	31.00	1	22825-2	31.00
21	Solenoid (Used on 2A4 only) A.C.	1	22825-4	31.00	1	22825-4	31.00	1	22825-4	31.00
21	Solenoid (Used on D2 only) D.C.	1	22823-2	45.00	1	22823-2	45.00	1	22823-2	45.00
21	Solenoid (Used on D3 only) D.C.	1	22823-3	33.06	1	22823-3	33.60	1	22823-3	33.60
21	Solenoid (Used on D4 only) D.C.	1	22823-4	38.00	1	22823-4	38.00	1	22823-4	38.00
22	Sleeve	1	23709	.70	1	23710	.80	1	23710	.80
23	"O" Ring—Fitting	2	25141-24	.80	2	PRP568-030	.40	2	PRP568-030	.40
24	"O" Ring—Shear-Seal	2	25101-6	.20	1	25101-10	.20	1	25101-10	.20
25	"O" Ring—Slide	2	25101-8	.30	2	25101-9	.20	2	25101-9	.20
26	"O" Ring—Lower Gland	1	25105-12	.30	1	25105-17	.30	1	25105-17	.30
27	"O" Ring—Upper Gland	1	25101-15	.30	1	25101-21	.30	1	25101-21	.30
28	Screw—Fitting	4	25618-4-10	.10	8	25618-4-14	.10	8	25618-4-14	.10
29	Screw—Solenoid Cover	4	25618-4-14	.10	4	25618-4-14	.10	4	25618-4-14	.10
30	Screw (Flat Hd. Mach. 82°) Adaptor Plate	4	#10-32x3/4 Lg.	.10	4	#10-32x3/4 Lg.	.10	4	#10-32x3/4 Lg.	.10
31	Screw—Solenoid	4	25618-4-8	.10	4	25618-4-8	.10	4	25618-4-8	.10
32	Screw—Bracket	4	#8-32x3/4 Lg.	.20	4	#8-32x3/4 Lg.	.20	4	#8-32x3/4 Lg.	.20
33	Washer	4	#8	.10	4	#8	.10	4	#8	.10
34	Retaining Ring—Lower Gland	1	#5005-87MF	.10	1	#5005-125MF	.10	1	#5005-125MF	.10
35	Retaining Ring—Rod	1	#5100-43	.10	1	5100-43	.10	1	5100-43	.10

*For 1/4, 3/8, 1/2" Tube add (AND) to Number Price on request.

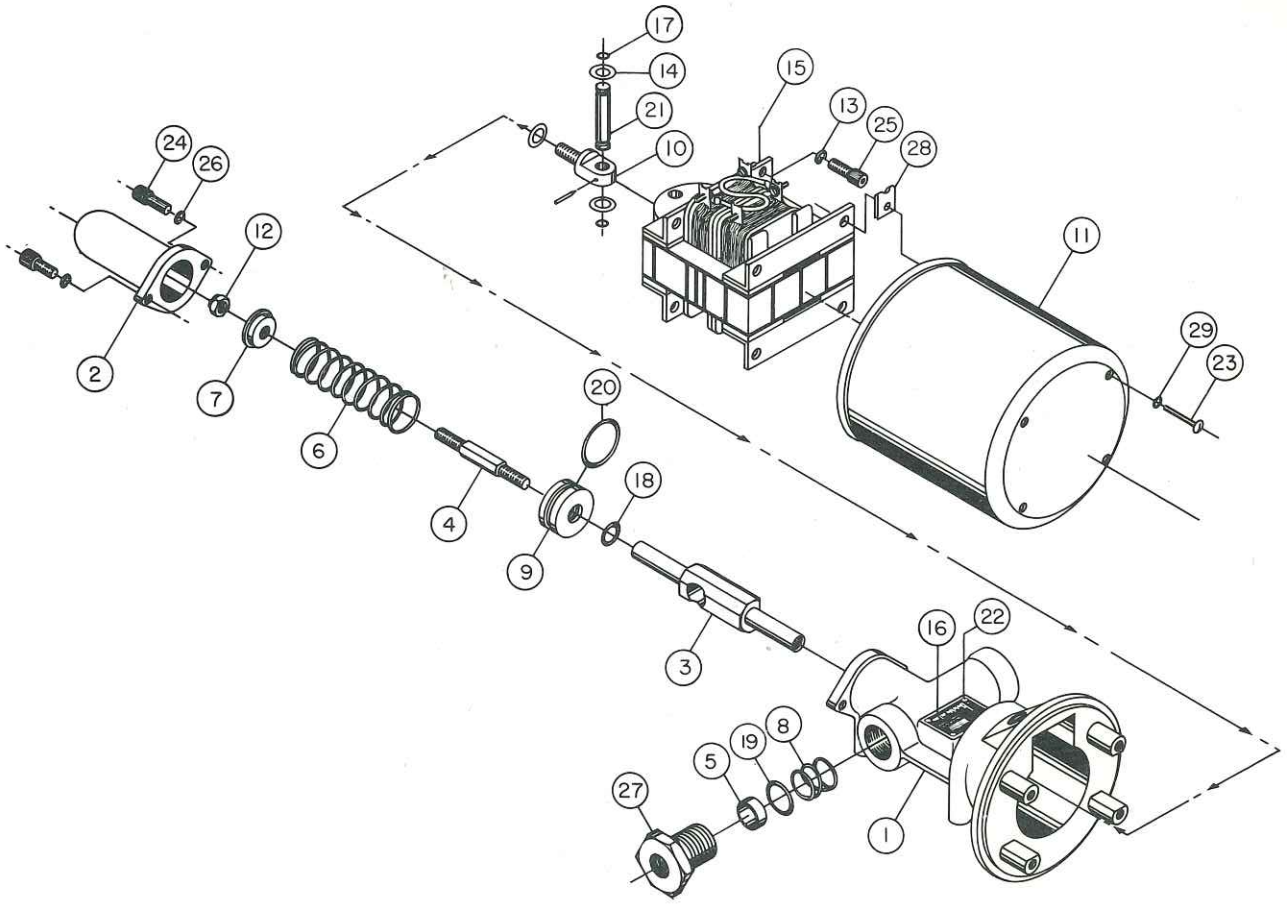
SPARE PARTS AND PRICES FOR DIRECT-SOLENOID SHUT-OFF VALVES (STANDARD A.C.)



Code No.	Description	Part No. for 1/4" Valves Models: 1751SOAO2A1, 1751SOAC2A1, 1751SOAO2A2, 1751SOAC2A2, 1751SOAO2A4, 1751SOAC2A4			Part No. for 3/8" Valves Models: 1752SOAO2A1, 1752SOAC2A1, 1752SOAO2A2, 1752SOAC2A2, 1752SOAO2A4, 1752SOAC2A4			Part No. for 1/2" Valves Models: 1753SOAO2A1, 1753SOAC2A1, 1753SOAO2A2, 1753SOAC2A2, 1753SOAO2A4, 1753SOAC2A4		
		No. Req'd.		List Price	No. Req'd.		List Price	No. Req'd.		List Price
1	Body	1	201109-A1	14.50	1	201110-A1	17.30	1	201110-A1	17.30
2	Slide	1	20217	8.90	1	20216	10.60	1	20216	10.60
3	Gland—Lower	1	20611	.90	1	20615	1.30	1	20615	1.30
4	Gland—Upper	1	20614	1.20	1	20612	1.10	1	20612	1.10
5	Fitting—Press*	1	20833-T1	3.20	1	20835-T1	5.50	1	20823-T1	7.10
6	Fitting—Cyl*	1	20833-T2	4.60	1	20835-T2	6.00	1	20823-T2	7.30
7	Cover—Solenoid	1	21005	4.10	1	21005	4.10	1	21005	4.10
8	Cap—Conduit	1	21204	.50	1	21204	.50	1	21204	.50
9	Spring—Shear Seal	1	21310	.20	1	21341	.10	1	21341	.10
10	Spring—Return (Normally Open Only)	1	21351	1.40						
10	Spring—Return (Normally Closed Only)	1	21355	.40						
10	Spring—Return				1	21344	.90	1	21344	.90
11	Shear Seal	1	21438	.90	1	21435	1.00	1	21435	1.00
12	Nut—Solenoid Mounting Screw	4	22301-3	.10	4	22301-3	.10	4	22301-3	.10
13	Washer—Cover Screw Lock	3	22502-2	.10	3	22502-2	.10	3	22502-2	.10
14	Washer—Fitting Screw Lock	4	22502-4	.10	8	22502-4	.10	8	22502-4	.10
15	Washer—Return Spring	2	22520-1	.10	2	22520-2	.10	2	22520-2	.10
16	Washer—Lower Gland	1	22527-1	.40	1	22527-3	.50	1	22527-3	.50
17	Washer—Upper Gland	1	22527-2	.40	1	22527-4	.60	1	22527-4	.60
18	Solenoid (Used on 2A1 only)	1	22811-1	13.90	1	22812-1	17.40	1	22812-1	17.40
18	Solenoid (Used on 2A2 only)	1	22811-2	13.90	1	22812-2	17.40	1	22812-2	17.40
18	Solenoid (Used on 2A4 only)	1	22811-4	13.90	1	22812-4	17.40	1	22812-4	17.40
19	Bracket Assembly—Solenoid	1	31804	5.50	1	31804	5.50	1	31804	5.50
20	Sleeve	1	23709	.70	1	23710	.80	1	23710	.80
21	"O" Ring—Fitting	2	25141-24	.80	2	PRP568-030	.40	2	PRP568-030	.40
22	"O" Ring—Shear Seal	1	25101-6	.20	1	25101-10	.20	1	25101-10	.20
23	"O" Ring—Slide	2	25101-8	.30	2	25101-9	.20	2	25101-9	.20
24	"O" Ring—Lower Gland	1	25105-12	.30	1	25105-17	.30	1	25105-17	.30
25	"O" Ring—Upper Gland	1	25101-15	.30	1	25101-21	.30	1	25101-21	.30
26	Screw—Fitting	4	25618-4-10	.10	8	25618-4-14	.10	8	25618-4-14	.10
27	Screw—Solenoid Mounting (Fillister)	4	#10-32x5/8 Lg.	.10	4	#10-32x5/8 Lg.	.10	4	#10-32x5/8 Lg.	.10
28	Screw—Conduit Cap	2	#12x3/8 Lg.	.10	2	#12x3/8 Lg.	.10	2	#12x3/8 Lg.	.10
29	Screw—Solenoid Cover	3	#8-32x3/8 Lg.	.10	3	#8-32x3/8 Lg.	.10	3	#8-32x3/8 Lg.	.10
30	Retaining Ring—Gland	1	5005-87MF	.10	1	5005-125MF	.10	1	5005-125MF	.10

*For 1/4, 3/8, 1/2" tube add (AND) to number. Price on request.

SPARE PARTS AND PRICES FOR DIRECT-SOLENOID SHUT-OFF VALVES 3/4 AND 1" STANDARD AC

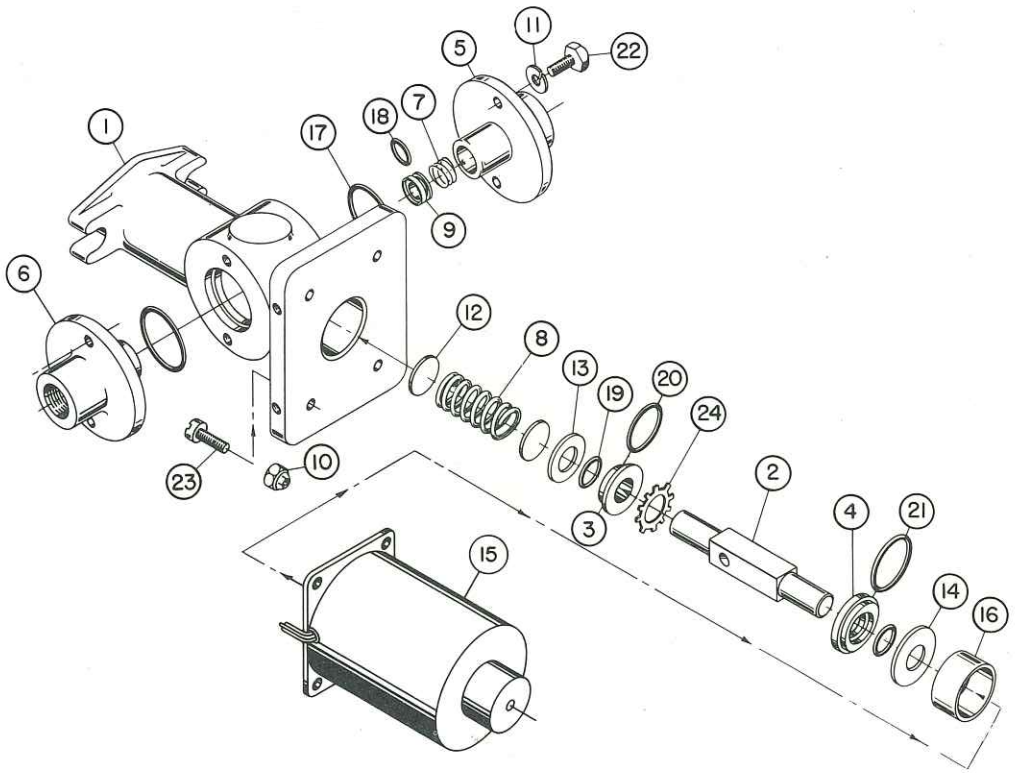


Models: 294SOAO2A1 295SOAO2A1
294SOAO2A2 295SOAO2A2
294SOAO2A4 295SOAO2A4
294SOAC2A1 295SOAC2A1
294SOAC2A2 295SOAC2A2
294SOAC2A4 295SOAC2A4

Part Code	Description	No. Req'd	Part Number	List Price
1	Body	1	19089	85.50
2	Housing	1	19091	5.60
3	Slide**	1	19102	15.50
4	Rod	1	20502	1.50
5	Shear Seal	1	19098	1.50
6	Spring—Return (Normally Open)	1	19109	2.50
6	Spring—Return (Normally Closed)	1	19097	1.50
7	Retainer—Spring	1	21512	.90
8	Spring—Shear Seal	1	19099	1.50
9	Gland	1	19094	1.90
10	Nut—Adjusting	1	19095	4.90
11	Cover—Solenoid	1	19100	8.20
12	Nut—Self locking	1	22302-7	.20
13	Lockwasher—Solenoid	4	22502-5	.10
14	Washer—Pin	2	22506-6	.10
15	Solenoid (115 VAC)	1	22804-1	58.00
15	Solenoid (230 VAC)	1	22804-2	58.00
15	Solenoid (460 VAC)	1	22804-4	58.00
16	Nameplate	1	25009	.20
17	"O" Ring—Pin	2	25101-5	.20
18	"O" Ring—Slide	2	25101-12	.40
19	"O" Ring—Shear Seal	1	25101-19	.50
20	"O" Ring—Gland	1	25101-27	.50
21	Pin	1	25312-49	2.00
22	Drive Screw	4	25601-2	.10
23	Screw—Cover	4	25613-16	.10
24	Cap Screw—Socket HD.	2	25615-5-12	.20
25	Screw—Hex. HD. (Solenoid)	4	25618-5-12	.10
26	Lockwasher—Cad. Plate (Nat'l. Lock Washer Co.)	2	5/16x.047x.078	.30
27	Bushing—Outside Hex. Reducing Brass (294)	2	1"x3/4" NPT	N.C.
28	Tinnerman Speed Nut	4	#779	.10
29	Lock-O-Seals	4	#10	.20

**When Slide ordered as spare part furnish 20502 Rod, 21512 Retainer, and 22301-7 Nut also.

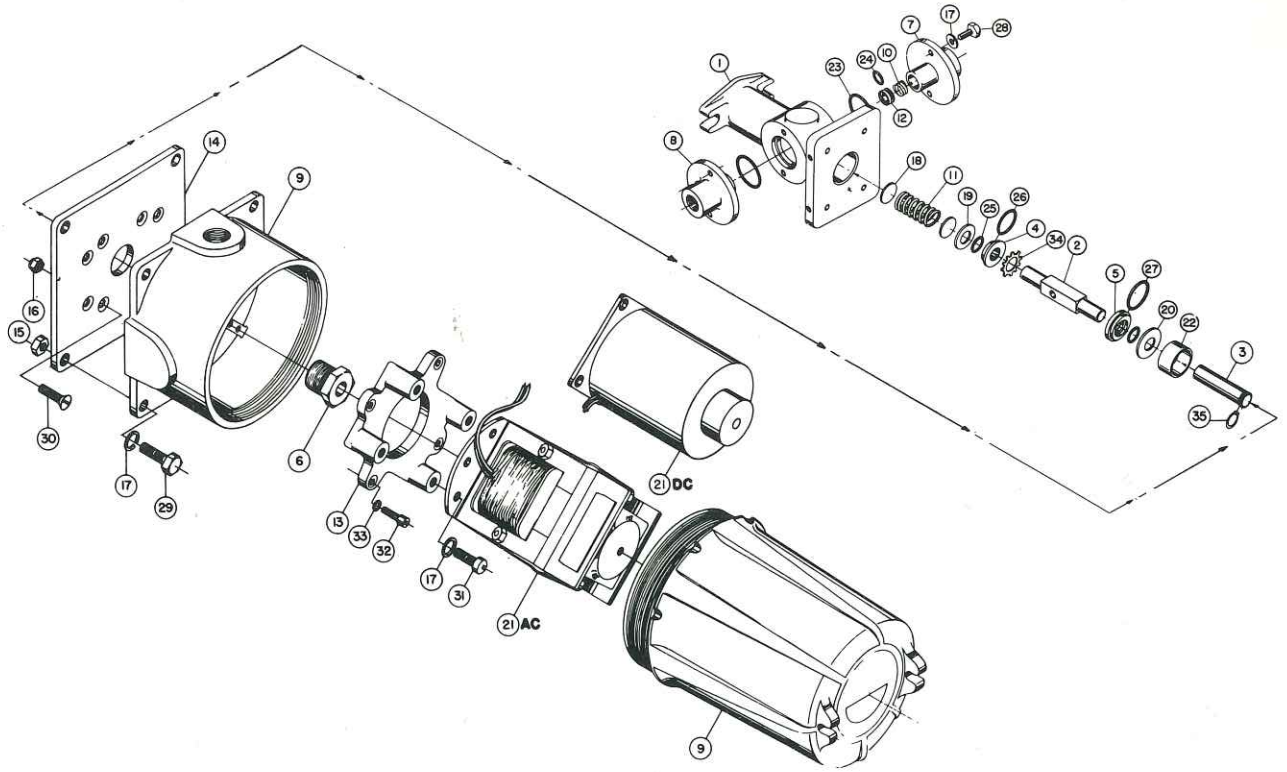
SPARE PARTS AND PRICES FOR DIRECT-SOLENOID SHUT-OFF VALVES (STANDARD D.C.)



Code No.	Description	Part No. for 1/4" Valves Models: 1751SOAO2D2, 1751SOAC2D2, 1751SOAO2D3, 1751SOAC2D3, 1751SOAO2D4, 1751SOAC2D4 — No. Req'd.		List Price	Part No. for 3/8" Valves Models: 1752SOAO2D2, 1752SOAC2D2, 1752SOAO2D3, 1752SOAC2D3, 1752SOAO2D4, 1752SOAC2D4 — No. Req'd.		List Price	Part No. for 1/2" Valves Models: 1753SOAO2D2, 1753SOAC2D2, 1753SOAO2D3, 1753SOAC2D3, 1753SOAO2D4, 1753SOAC2D4 — No. Req'd.		List Price
1	Body	1	201109-A1	14.50	1	201110-A1	17.30	1	201110-A1	17.30
2	Slide	1	20217	8.90	1	20216	10.60	1	20216	10.60
3	Gland—Lower	1	20611	.90	1	20615	1.30	1	20615	1.30
4	Gland—Upper	1	20614	1.20	1	20612	1.10	1	20612	1.10
5	Fitting—Press*	1	20833-T1	3.20	1	20835-T1	5.50	1	20823-T1	7.10
6	Fitting—Cyl*	1	20833-T2	4.60	1	20835-T2	6.00	1	20823-T2	5.90
7	Spring—Shear Seal	1	21310	.20	1	21341	.10	1	21341	.10
8	Spring—Return (Normally Open Only)	1	21351	1.40						
8	Spring—Return (Normally Closed Only)	1	21355	.40						
8	Spring—Return				1	21344	.90	1	21344	.90
9	Shear Seal	1	21438	.90	1	21435	1.00	1	21435	1.00
10	Nut—Solenoid Mounting Screw	4	22301-3	.10	4	22301-3	.10	4	22301-3	.10
11	Washer—Filling Screw Lock	4	22502-4	.10	8	22502-4	.10	8	22502-4	.10
12	Washer—Return Spring	2	22520-1	.10	2	22520-2	.10	2	22520-2	.10
13	Washer—Lower Gland	1	22527-1	.40	1	22527-3	.50	1	22527-3	.50
14	Washer—Upper Gland	1	22527-2	.40	1	22527-4	.60	1	22527-4	.60
15	Solenoid (Used on 2D2 only)	1	22822-2	45.00	1	22822-2	45.00	1	22822-2	45.00
15	Solenoid (Used on 2D3 only)	1	22822-3	33.60	1	22822-3	33.60	1	22822-3	33.60
15	Solenoid (Used on 2D4 only)	1	22822-4	38.00	1	22822-4	38.00	1	22822-4	38.00
16	Sleeve	1	23709	.70	1	23710	.80	1	23710	.80
17	"O" Ring—Fitting	2	25141-24	.80	2	PRP568-030	.40	2	PRP568-030	.40
18	"O" Ring—Shear Seal	1	25101-6	.20	1	25101-10	.20	1	25101-10	.20
19	"O" Ring—Slide	2	25101-8	.30	2	25101-9	.20	2	25101-9	.20
20	"O" Ring—Lower Gland	1	25105-12	.30	1	25105-17	.30	1	25105-17	.30
21	"O" Ring—Upper Gland	1	25101-15	.30	1	25101-21	.30	1	25101-21	.30
22	Screw—Fitting	4	25618-4-10	.10	8	25618-4-14	.10	8	25618-4-14	.10
23	Screw—Solenoid Mounting (Fillister)	4	#10-32x3/4 Lg.	.10	4	#10-32x3/4 Lg.	.10	4	#10-32x3/4 Lg.	.10
24	Retaining Ring—Gland	1	5005-87MF	.10	1	5005-125MF	.10	1	5005-125MF	.10

*For 1/4, 3/8, 1/2" tube add (AND) to number. Price on request.

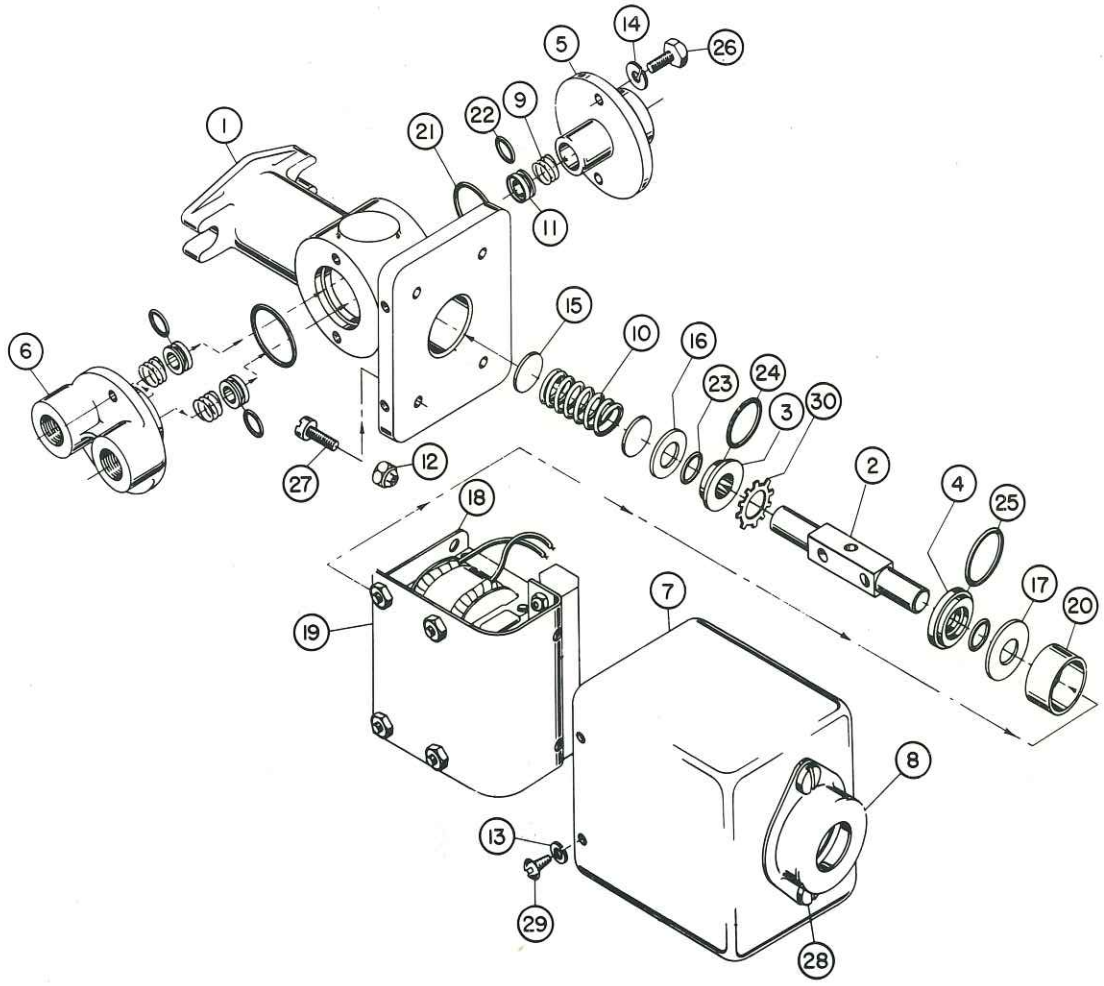
SPARE PARTS AND PRICES FOR DIRECT-SOLENOID SHUT-OFF VALVES (EXPLOSION PROOF A.C.) (EXPLOSION PROOF D.C.)



Code No.	Description	Part No. for 1/4" Valve Models: X1751SOAO2A1, X1751SOAO2A2, X1751SOAO2A4, X1751SOAC2A1, X1751SOAC2A2, X1751SOAC2A4, X1751SOAO2D2, X1751SOAO2D3, X1751SOAO2D4, X1751SOAC2D2, X1751SOAC2D2, X1751SOAC2D4			Part No. for 3/8" Valve Models: X1752SOAO2A1, X1752SOAO2A2, X1752SOAO2A4, X1752SOAC2A1, X1752SOAC2A2, X1752SOAC2A4, X1752SOAO2D2, X1752SOAO2D3, X1752SOAO2D4, X1752SOAC2D2, X1752SOAC2D3, X1752SOAC2D4			Part No. for 1/2" Valve Models: X1753SOAO2A1, X1753SOAO2A2, X1753SOAO2A4, X1753SOAC2A1, X1753SOAC2A2, X1753SOAC2A4, X1753SOAO2D2, X1752SOAO2D3, X1752SOAO2D4, X1752SOAC2D2, X1752SOAC2D3, X1752SOAC2D4		
		No. Req'd.		List Price	No. Req'd.		List Price	No. Req'd.		List Price
1	Body	1	201109-A1	14.50	1	201110-A1	17.30	1	201110-A1	17.30
2	Slide	1	20217	8.90	1	20216	10.60	1	20216	10.60
3	Rod	1	20508	2.00	1	20508	2.00	1	20508	2.00
4	Gland—Lower	1	20611	.90	1	20615	1.30	1	20615	1.30
5	Gland—Upper	1	20614	1.20	1	20612	1.10	1	20612	1.10
6	Gland Solenoid Cover	1	20621	2.20	1	20621	2.20	1	20621	2.20
7	Fitting—Press*	1	20833-T1	3.20	1	20835-T1	5.50	1	20823-T1	7.10
8	Fitting—Cyl*	1	20833-T2	4.60	1	20835-T2	6.00	1	20823-T2	7.30
9	Cover Solenoid A.C.	1	21008-1	44.00	1	21008-1	44.00	1	21008-1	44.00
9	Cover Solenoid D.C.	1	21008-1	44.00	1	21008-1	44.00	1	21008-1	44.00
10	Spring—Shear Seal	2	21310	.20	1	21341	.10	1	21341	.10
11	Sring-Return A.C.	1	21351	1.40	1	21344	.90	1	21344	.90
11	Spring-Return—Normally Open D.C.	1	21351	1.40	1	21344	.90	1	21344	.90
11	Spring-Return—Normally Closed D.C.	1	21355	.40	1	21344	.90	1	21344	.90
12	Shear Seal	2	21438	.90	1	21435	1.00	1	21435	1.00
13	Bracket	1	21827	5.20	1	21827	5.20	1	21827	5.20
14	Adaptor Plate	1	21828	5.50	1	21828	5.50	1	21828	5.50
15	Nut—Solenoid Cover Screw	4	22308-4	.10	4	22308-4	.10	4	22308-4	.10
16	Nut—Adaptor Plate Screw	4	22301-3	.10	4	22301-3	.10	4	22301-3	.10
17	Washer—Solenoid Cover Fitting Lock	12	22517-4	.10	16	22517-4	.10	16	22517-4	.10
18	Washer—Return Spring	7	22520-1	.10	2	22520-2	.10	2	22520-2	.10
19	Washer—Gland Lower	1	22517-1	.40	1	22527-3	.50	1	22527-3	.50
20	Washer—Gland Upper	1	22527-2	.40	1	22527-4	.60	1	22527-4	.60
21	Solenoid (Used on 2A1 only) A.C.	1	22825-1	31.00	1	22825-1	31.00	1	22825-1	31.00
21	Solenoid (Used on 2A2 only) A.C.	1	22825-2	31.00	1	22825-2	31.00	1	22825-2	31.00
21	Solenoid (Used on 2A4 only) A.C.	1	22825-4	31.00	1	22825-4	31.00	1	22825-4	31.00
21	Solenoid (Used on D2 only) D.C.	1	22823-2	45.00	1	22823-2	45.00	1	22823-2	45.00
21	Solenoid (Used on D3 only) D.C.	1	22823-3	33.60	1	22823-2	33.60	1	22823-3	33.60
21	Solenoid (Used on D4 only) D.C.	1	22823-4	38.00	1	22823-4	38.00	1	22823-4	38.00
22	Sleeve	1	23709	.70	1	23710	.80	1	23710	.80
23	"O" Ring—Fitting	2	25141-24	.80	2	PRP568-030	.40	2	PRP568-030	.40
24	"O" Ring—Shear Seal	2	25101-6	.20	1	25101-10	.20	1	25101-10	.20
25	"O" Ring—Slide	2	25101-8	.30	2	25101-9	.20	2	25101-9	.20
26	"O" Ring—Lower Gland	1	25105-12	.30	1	25105-17	.30	1	25105-17	.30
27	"O" Ring—Upper Gland	1	25101-15	.30	1	25101-21	.30	1	25101-21	.30
28	Screw—Fitting	4	25618-4-10	.10	8	25618-4-14	.10	8	25618-4-14	.10
29	Screw—Solenoid Cover	4	25618-4-14	.10	4	25618-4-14	.10	4	25618-4-14	.10
30	Screw—Adaptor Plate (Flat Hd. Mach. 82°)	4	#10-32x3/4 Lg.	.10	4	#10-32x3/4 Lg.	.10	4	#10-32x3/4 Lg.	.10
31	Screw—Solenoid	4	25618-4-8	.10	4	25618-4-8	.10	4	25618-4-8	.10
32	Screw—Bracket	4	#8-32x3/4 Lg.	.20	4	#8-32x3/4 Lg.	.20	4	#8-32x3/4 Lg.	.20
33	Washer—Bracket Screw Lock	4	#8	.10	4	#8	.10	4	#8	.10
34	Retaining Ring—Lower Gland	1	#5005-87MF	.10	1	#5005-125MF	.10	1	#5005-125MF	.10
35	Retaining Ring—Rod	1	#5100-43	.10	1	5100-43	.10	1	5100-43	.10

*For 1/4, 3/8, 1/2" Tube add (AND) to number. Price on request.

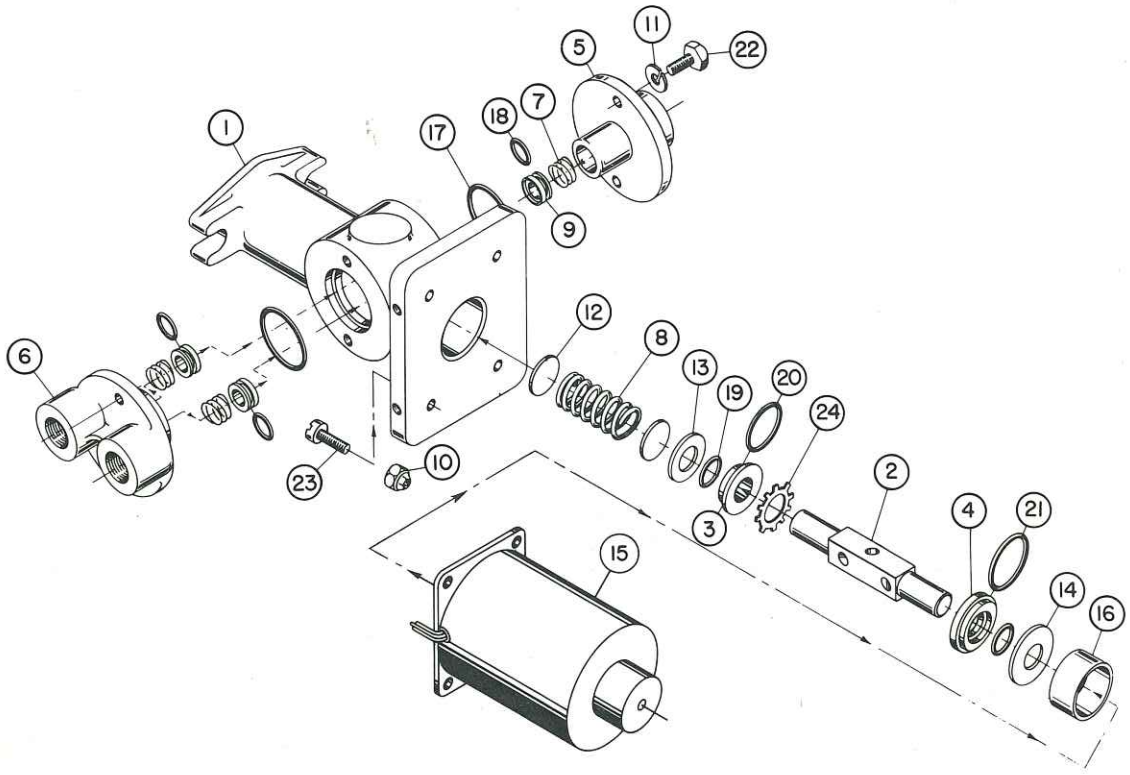
SPARE PARTS AND PRICES FOR DIRECT-SOLENOID DIVERTER VALVES (STANDARD A.C.)



Code No.	Description	Part No. for 1/4" Valves Models: 2661SOAQ2A1, 2661SOAQ2A2, 2661SOAQ2A4 — No. Req'd.		List Price	Part No. for 3/8" Valves Models: 2662SOAQ2A1, 2662SOAQ2A2, 2662SOAQ2A4 — No. Req'd.		List Price	Part No. for 1/2" Valves Models: 2663SOAQ2A1, 2663SOAQ2A2, 2663SOAQ2A4 — No. Req'd.		List Price
1	Body	1	201109-A1	14.50	1	201110-A1	17.30	1	201110-A1	17.30
2	Slide	1	20214	10.40	1	20215	11.40	1	20215	11.40
3	Gland—Lower	1	20611	.90	1	20615	1.30	1	20615	1.30
4	Gland—Upper	1	20614	1.20	1	20612	1.10	1	20612	1.10
5	Fitting—Pressure*	1	20833-T1	3.20	1	20835-T1	5.50	1	20823-T1	7.10
6	Fitting—Cylinder*	1	20832-T	7.60	1	20824-T2	9.90	1	20824-T3	9.90
7	Cover—Solenoid	1	21005	4.10	1	21005	4.10	1	21005	4.10
8	Cap—Conduit	1	21204	.50	1	21204	.50	1	21204	.50
9	Spring—Shear Seal	3	21310	.20	3	21341	.10	3	21341	.10
10	Spring—Return	1	21355	.40	1	21344	.90	1	21344	.90
11	Shear—Seal	3	21438	.90	3	21435	1.00	3	21435	1.00
12	Nut—Solenoid Mounting Screw	4	22301-3	.10	4	22301-3	.10	4	22301-3	.10
13	Washer—Cover Screw Lock	3	22502-2	.10	3	22502-2	.10	3	22502-2	.10
14	Washer—Fitting Screw Lock	4	22502-4	.10	8	22502-4	.10	8	22502-4	.10
15	Washer—Return Spring	2	22520-1	.10	2	22520-2	.10	2	22520-2	.10
16	Washer—Lower Gland	1	22527-1	.40	1	22527-3	.50	1	22527-3	.50
17	Washer—Upper Gland	1	22527-2	.40	1	22527-4	.60	1	22527-4	.60
18	Solenoid (Used on 2A1 only)	1	22811-1	13.90	1	22812-1	17.40	1	22812-1	17.40
18	Solenoid (Used on 2A2 only)	1	22811-2	13.90	1	22812-2	17.40	1	22812-2	17.40
18	Solenoid (Used on 2A4 only)	1	22811-4	13.90	1	22812-4	17.40	1	22812-4	17.40
19	Bracket Assembly—Solenoid	1	31804	5.50	1	31804	5.50	1	31804	5.50
20	Sleeve	1	23709	.70	1	23710	.80	1	23710	.80
21	"O" Ring—Fitting	2	25141-24	.80	2	PRP568-030	.40	2	PRP568-030	.40
22	"O" Ring—Shear Seal	3	25101-6	.20	3	25101-10	.20	3	25101-10	.20
23	"O" Ring—Slide	2	25101-8	.30	2	25101-9	.20	2	25101-9	.20
24	"O" Ring—Lower Gland	1	25101-12	.30	1	25105-17	.30	1	25105-17	.30
25	"O" Ring—Upper Gland	1	25101-15	.30	1	25101-21	.30	1	25101-21	.30
26	Screw—Fittings	4	25618-4-10	.10	8	25618-4-14	.10	8	25618-4-14	.10
27	Screw—Solenoid Mounting	4	#10-32x5/8	.10	4	#10-32x5/8	.10	4	#10-32x5/8	.10
28	Screw—Conduit Cap	2	#12x3/8	.10	2	#12x3/8	.10	2	#12x3/8	.10
29	Screw—Solenoid Cover	3	#8-32x3/8	.10	3	#8-32x3/8	.10	3	#8-32x3/8	.10
30	Retaining Ring—Gland	1	5005-87MF	.10	1	5005-125MF	.10	1	5005-125MF	.10

*For 1/4, 3/8, 1/2" tube add (AND) to Numbers. Price on request.

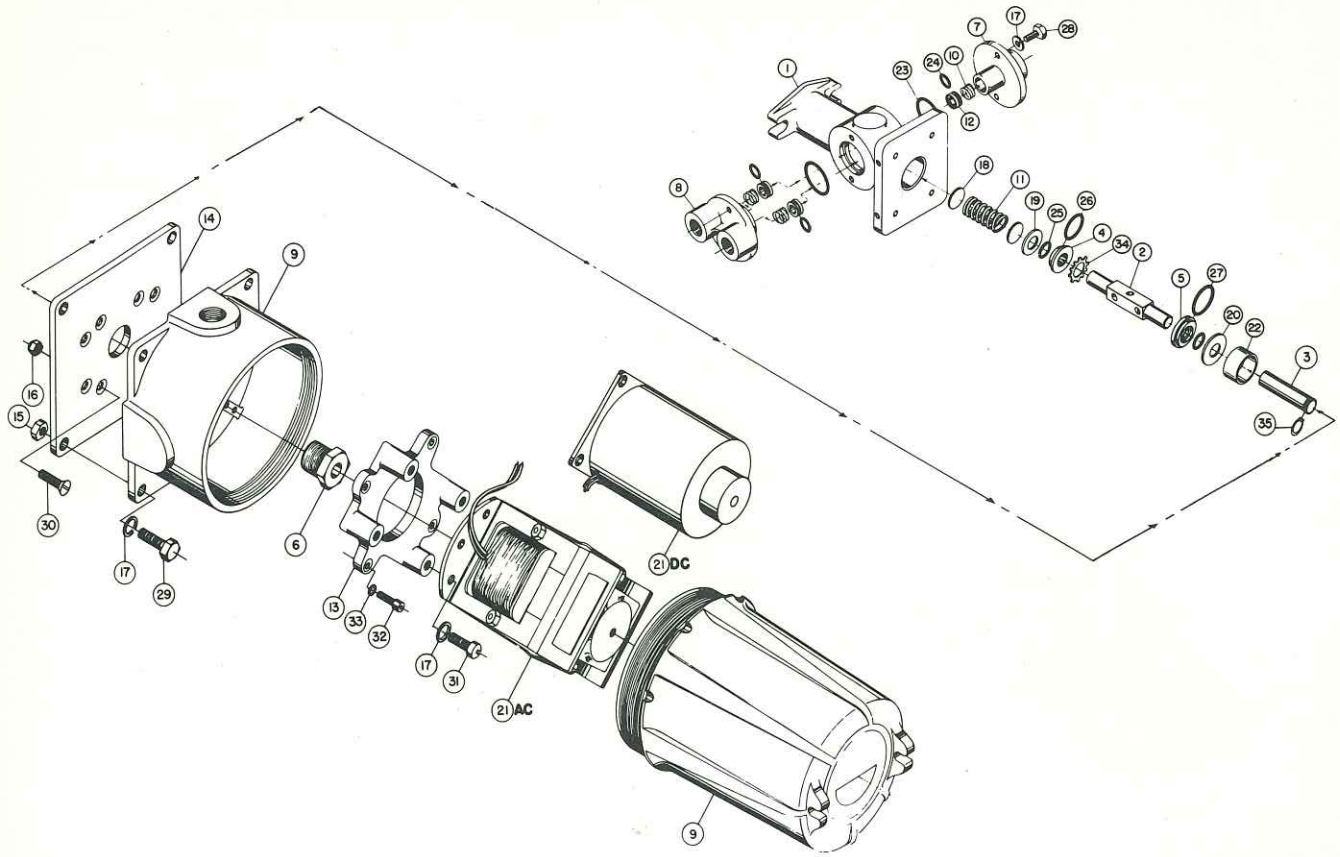
SPARE PARTS AND PRICES FOR DIRECT-SOLENOID DIVERTER VALVES (STANDARD D.C.)



Code No.	Description	Part No. for 1/4" Valves Models: 2661SOAQ2D2 2661SOAQ2D3 2661SOAQ2D4 No. Req'd.		List Price	Part No. for 3/8" Valves Models: 2662SOAO2D2 2662SOAQ2D3 2662SOAQ2D4 No. Req'd.		List Price	Part No. for 1/2" Valves Models: 2663SOAQ2D2 2663SOAQ2D3 2663SOAQ2D4 No. Req'd.		List Price
1	Body	1	201109-A1	14.50	1	201110-A1	17.30	1	201110-A1	17.30
2	Slide	1	20214	10.40	1	20215	11.40	1	20215	11.40
3	Gland—Lower	1	20611	.90	1	20615	1.30	1	20615	1.30
4	Gland—Upper	1	20614	1.20	1	20612	1.10	1	20612	1.10
5	Fitting—Pressure*	1	20833-T1	3.20	1	20835-T1	5.50	1	20823-T1	7.10
6	Fitting—Cylinder*	1	20832-T	7.60	1	20824-T2	9.90	1	20824-T3	9.90
7	Spring—Shear Seal	3	21310	.20	3	21341	.10	3	21341	.10
8	Spring—Return	1	21355	.40	1	21344	.90	1	21344	.90
9	Shear—Seal	3	21438	.90	3	21435	1.00	3	21435	1.00
10	Nut—Solenoid Mounting Screw	4	22301-3	.10	4	22301-3	.10	4	22301-3	.10
11	Washer—Fitting Screw Lock	4	22502-4	.10	8	22502-4	.10	8	22502-4	.10
12	Washer—Return Spring	2	22520-1	.10	2	22520-2	.10	2	22520-2	.10
13	Washer—Lower Gland	1	22527-1	.40	1	22527-3	.50	1	22527-3	.50
14	Washer—Upper Gland	1	22527-2	.40	1	22527-4	.60	1	22527-4	.60
15	Solenoid (Used on 2D2 only)	1	22822-2	45.00	1	22822-2	45.00	1	22822-2	45.00
15	Solenoid (Used on 2D3 only)	1	22822-3	33.60	1	22822-3	33.60	1	22822-3	33.60
15	Solenoid (Used on 2D4 only)	1	22822-4	38.00	1	22822-4	38.00	1	22822-4	38.00
16	Sleeve	1	23709	.70	1	23710	.80	1	23710	.80
17	"O" Ring—Fitting	2	25141-24	.80	2	PRP568-030	.40	2	PRP568-030	.40
18	"O" Ring—Shear Seal	3	25101-6	.20	3	25101-10	.20	3	25101-10	.20
19	"O" Ring—Slide	2	25101-8	.30	2	25101-9	.20	2	25101-9	.20
20	"O" Ring—Lower Gland	1	25105-12	.30	1	25105-17	.30	1	25105-17	.30
21	"O" Ring—Upper Gland	1	25101-15	.30	1	25101-21	.30	1	25101-21	.30
22	Screw—Fittings	4	25618-4-10	.10	8	25618-4-14	.10	8	25618-4-14	.10
23	Screw—Solenoid Mounting	4	#10-32x3/4 Lg.	.10	4	#10-32x3/4 Lg.	.10	4	#10-32x3/4 Lg.	.10
24	Retaining Ring—Gland	1	5005-87MF	.10	1	5005-125MF	.10	1	5005-125MF	.10

*For 1/4, 3/8, 1/2" tube add (AND) to Numbers. Price on request.

SPARE PARTS AND PRICES FOR DIRECT-SOLENOID DIVERTER VALVES (EXPLOSION PROOF A.C.) (EXPLOSION PROOF D.C.)



Code No.	Description	Part No. for 1/4" Valve Models: X2661SOAQ2A1, X2661SOAQ2A2, X2661SOAQ2A4, X2661SOAQ2D2, X2661SOAQ2D3, X2661SOAQ2D4 — No. Req'd.	Part No.	List Price	Part No. for 3/8" Valve Models: X2662SOAQ2A1, X2662SOAQ2A2, X2662SOAQ2A4, X2662SOAQ2D2, X2662SOAQ2D3, X2662SOAQ2D4 — No. Req'd.	Part No.	List Price	Part No. for 1/2" Valve Models: X2663SOAQ2A1, X2663SOAQ2A2, X2663SOAQ2A4, X2663SOAQ2D2, X2663SOAQ2D3, X2663SOAQ2D4 — No. Req'd.	Part No.	List Price
1	Body	1	201109-A1	$14.50	1	201110-A1	$17.30	1	201110-A1	$17.30
2	Slide	1	20214	10.40	1	20215	11.40	1	20215	11.40
3	Rod	1	20508	2.00	1	20508	2.00	1	20508	2.00
4	Gland—Lower	1	20611	.90	1	20615	1.30	1	20615	1.30
5	Gland—Upper	1	20614	1.20	1	20612	1.10	1	20612	1.10
6	Gland—Solenoid Cover	1	20621	2.20	1	20621	2.20	1	20621	2.20
7	Fitting—Press*	1	20833-T1	3.20	1	20835-T1	5.50	1	20823-T1	7.10
8	Fitting—Cyl*	1	20832-T	7.60	1	20824-T2	9.90	1	20824-T3	9.90
9	Cover—Solenoid A.C.	1	21008-1	44.00	1	21008-1	44.00	1	21008-1	44.00
9	Cover—Solenoid D.C.	1	21008-1	44.00	1	21008-1	44.00	1	21008-1	44.00
10	Spring—Shear Seal	2	21310	.20	1	21341	.10	1	21341	.10
11	Spring—Return A.C.	1	21351	1.40	1	21344	.90	1	21344	.90
11	Spring—Return D.C.	1	21355	.40	1	21344	.90	1	21344	.90
12	Shear Seal	2	21438	.90	3	21435	1.00	3	21435	1.00
13	Bracket	1	21827	5.20	1	21827	5.20	1	21827	5.20
14	Adaptor Plate	1	21828	5.50	1	21828	5.50	1	21828	5.50
15	Nut—Solenoid Cover Screw	4	22308-4	.10	4	22308-4	.10	4	22308-4	.10
16	Nut—Adaptor Plate Screw	4	22301-3	.10	4	22301-3	.10	4	22301-3	.10
17	Washer—Solenoid Cover & Fitting Screw	12	22517-4	.10	16	22517-4	.10	16	22517-4	.10
18	Washer—Return Spring	7	22520-1	.10	2	22520-2	.10	2	22520-2	.10
19	Washer (Gland—Lower)	1	22527-1	.40	1	22527-3	.50	1	22527-3	.50
20	Washer (Gland—Upper)	1	22527-2	.40	1	22527-4	.60	1	22527-4	.60
21	Solenoid (Used on 2A1 only) A.C.	1	22825-1	31.00	1	22825-1	31.00	1	22825-1	31.00
21	Solenoid (Used on 2A2 only) A.C.	1	22825-2	31.00	1	22825-2	31.00	1	22825-2	31.00
21	Solenoid (Used on 2A4 only) A.C.	1	22825-4	31.00	1	22825-4	31.00	1	22825-4	31.00
21	Solenoid (Used on D2 only) D.C.	1	22823-2	45.00	1	22823-2	45.00	1	22823-2	45.00
21	Solenoid (Used on D3 only) D.C.	1	22823-3	33.60	1	22823-3	33.60	1	22823-3	33.60
21	Solenoid (Used on D4 only) D.C.	1	22823-4	38.00	1	22823-4	38.00	1	22823-4	38.00
22	Sleeve	1	23709	.70	1	23710	.80	1	23710	.80
23	"O" Ring—Fitting	2	25141-24	.80	2	PRP568-030	.40	2	PRP568-030	.40
24	"O" Ring—Shear Seal	2	25101-6	.20	3	25101-10	.20	3	25101-10	.20
25	"O" Ring—Slide	2	25101-8	.30	2	25101-9	.20	2	25101-9	.20
26	"O" Ring—Lower Gland	1	25105-12	.30	1	25105-17	.30	1	25105-17	.30
27	"O" Ring—Upper Gland	1	25101-15	.30	1	25101-21	.30	1	25101-21	.30
28	Screw—Fitting	4	25618-4-10	.10	8	25618-4-14	.10	8	256Z8-4-14	.10
29	Screw—Solenoid Cover	4	25618-4-14	.10	4	25618-4-14	.10	4	25618-4-14	.10
30	Screw (Flat Hd. Mach. 82°) Adaptor Plate	4	#10-32x3/4 Lg.	.10	4	#10-32x3/4 Lg.	.10	4	#10-32x3/4 Lg.	.10
31	Screw—Solenoid	4	25618-4-8	.10	4	25618-4-8	.10	4	25618-4-8	.10
32	Screw—Bracket (Socket Head Cap)	4	#8-32x3/4 Lg.	.20	4	#8-32x3/4 Lg.	.20	4	#8-32x3/4 Lg.	.20
33	Washer—Bracket Screw Lock	4	#8	.10	4	#8	.10	4	#8	.10
34	Retaining Ring—Lower Gland	1	#5005-87MF	.10	1	#5005-125MF	.10	1	5005-125MF	.10
35	Retaining Ring—Rod	1	#5100-43	.10	1	5100-43	.10	1	5100-43	.10

*For 1/4, 3/8, 1/2" Tube add (AND) to Number. Price on request.

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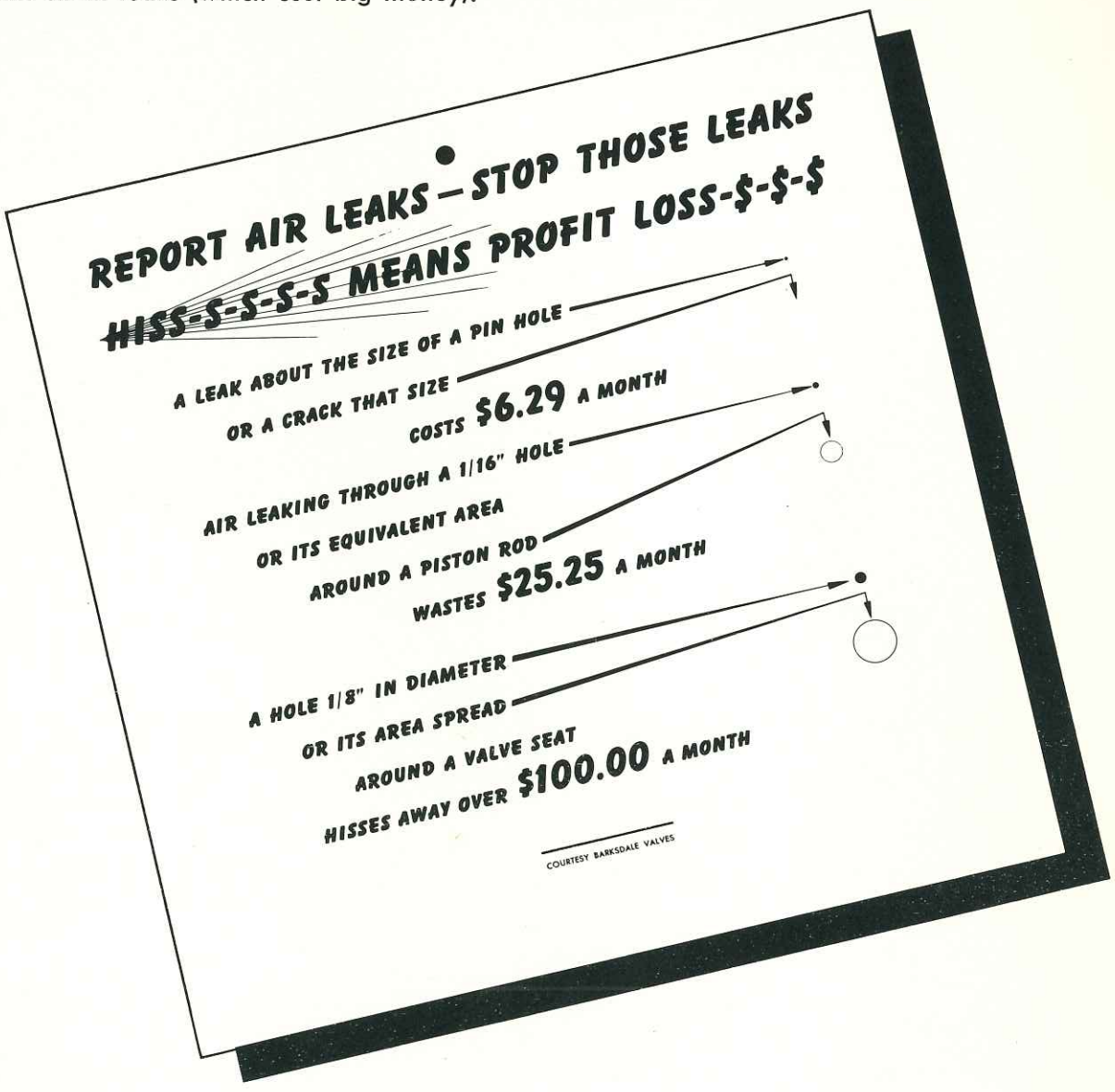
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